

June, 2006

**CURRICULUM VITAE**

**NAME:** Louis J. Ignarro      **DATE OF BIRTH:** May 31, 1941

**SOC. SEC. NO.:** 113-34-4308      **PLACE OF BIRTH:** Brooklyn, New York

**CITIZENSHIP:** U.S. Citizen

**MARITAL STATUS:** Married to Sharon E. Williams, M.D.

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**TRAINING:**

Degree of B.S., Pharmacy, 1962  
Columbia University, New York

Degree of Ph.D., Pharmacology, major - Physiology, minor, 1966  
University of Minnesota, Minneapolis, Minnesota

Postdoctoral Fellowship, Chemical Pharmacology, 1968  
N.H.I., N.I.H.

**POSITIONS:**

Jerome J. Belzer, MD, Distinguished Professor of Pharmacology,  
Department of Molecular and Medical Pharmacology,  
UCLA School of Medicine, Los Angeles, California 90095 11/97 - present

Professor, Department of Molecular and Medical Pharmacology,  
UCLA School of Medicine, Los Angeles, California 90095 11/93 - 09/97

Professor of Pharmacology and Assistant Dean for Student Research,  
UCLA School of Medicine, Los Angeles, California 90024 11/90 - 10/93

Professor and Acting Chairman, Department of Pharmacology,  
UCLA School of Medicine, Los Angeles, California 90024 07/89 - 06/90

Professor, Department of Pharmacology,  
UCLA School of Medicine, Los Angeles, California 90024 06/85 - present

Professor, Department of Pharmacology,  
Tulane University School of Medicine, New Orleans, LA 70112 01/79 - 05/85

Associate Professor, Department of Pharmacology,  
Tulane University School of Medicine, New Orleans, LA 70112 09/73 - 12/78

Assistant Professor, Department of Pharmacology,  
Tulane University School of Medicine, New Orleans, LA 70112 01/73 - 08/73

Staff Scientist, Research Department, Pharmaceutical Division  
CIBA-GEIGY Corporation, Ardsley, N.Y. 1968 - 1972

### **CURRENT RESEARCH INTERESTS:**

- I. Bioregulation of cyclic GMP and cyclic AMP biosynthesis in mammalian tissues.
- II. Purification, properties, and regulation of soluble guanylate cyclase.
- III. Role of cyclic GMP in vascular smooth muscle relaxation and inhibition of platelet function by nitrovasodilators and EDRF or nitric oxide.
- IV. Biosynthesis and metabolism of endogenous nitric oxide in mammalian cells.
- V. Role of endogenous nitric oxide in mediating penile erection.
- VI. Role of nitric oxide, superoxide anion and peroxynitrite anion in mediating ischemic reperfusion tissue injury.
- VII. Role of nitric oxide in mediating cytotoxicity by activated macrophages.
- VIII. Regulation of high output production of nitric oxide.
- VIII. Induction and regulation of arginase and arginine levels.
- IX. Role of arginase and its regulation in cell proliferation.
- X. S-Nitrosylation reactions involving nitric oxide in physiology.
- XI. Regulation of arginase expression in vascular smooth muscle cells.
- XII. Role of nitric oxide in exercise-induced protection against atherosclerosis.

### **RESEARCH INTERESTS DURING POSTDOCTORAL FELLOWSHIP:**

- 1966 – 1968      National Institutes of Health Postdoctoral Fellow  
                          Laboratory of Chemical Pharmacology  
                          National Heart Institute, Bethesda, Maryland  
                          Research Director: Dr. Elwood O. Titus
1. Isolated mouse splenic smooth muscle; potential usefulness as a pharmacological model for contractile and relaxant drugs.
  2. Adrenergic drug-receptor interactions.
  3. Biochemical nature of the adrenergic  $\alpha$ -receptor: Covalent binding of tritium-labeled alkylating agent N,N-dimethyl-2-bromo-p-methyl phenethylamine HBr (L-35-H<sup>3</sup>), to  $\alpha$  receptors and to sympathetic nerve endings.

### **RESEARCH IN GRADUATE SCHOOL:**

- 1962 – 1966      U.S.P.H.S. Predoctoral Fellow in Pharmacology  
                          University of Minnesota, Minneapolis, Minnesota  
                          Research Director: F. E. Shideman, Ph.D., M.D.

**THESIS TITLE:** Catecholamines and the Enzymes Involved in Their Synthesis and Metabolism in the Embryonic and Developing Chick

- Part I.      Catechol-O-Methyl Transferase and Monoamine Oxidase Activities in the Heart of the Embryonic and Developing Chick.

- Part II. Dopa, Dopamine, Norepinephrine and Epinephrine Concentrations in the Heart of the Embryonic and Developing Chick.
- Part III. Uptake and Subcellular Distribution of Catecholamines by the Embryonic Heart and Whole Embryo of the Chick.
- Part IV. Sequence of Appearance of the Catecholamine Biosynthesizing Enzymes in the Developing Chick Embryo.

#### **SOCIETY MEMBERSHIPS:**

American Society for Pharmacology and Experimental Therapeutics  
 American Society for Biochemistry and Molecular Biology  
 American Physiological Society  
 American Society for Cell Biology  
 American Rheumatism Association  
 American Society of Hematology  
 Society for Experimental Biology and Medicine  
 American Heart Association (Councils: Basic Sci; Cardiopul & Crit Care; Circulation)  
 American Federation for Clinical Research  
 Society of the Sigma Xi  
 Rho Chi Pharmaceutical Honor Society  
 Research Society of America  
 American Association for the Advancement of Science  
 New York Academy of Sciences  
 Golden Key National Honor Society  
 National Academy of Sciences  
 American Academy of Arts and Sciences  
 American Philosophical Society

#### **NATIONAL COMMITTEES/ORGANIZATIONS:**

Pharmacology Study Section (N.I.H.), 1981 - 1985  
 Experimental Cardiovascular Sciences Study Section (N.I.H.), 2001

#### **JOURNAL EDITORIAL SERVICES:**

J. Pharmacol. Exp. Ther.; Biochem. Pharmacol.; Molec. Pharmacol.; Metabolism; J. Cyclic Nucleotide Res.; Can. J. Physiol. Pharmacol.; Science; J. Biol. Chem.; Circ. Res.; Am. J. Physiol.; Hypertension; Eur. J. Pharmacol.; Nature

Member of editorial board: Biochem. Pharmacol.; Circ. Res.; Arch. Biochem. Biophys.

Founder and Editor-in-Chief: *NITRIC OXIDE* Biology and Chemistry (Academic Press).

Editor: Proceedings of the National Academy of Sciences

#### **AWARDS:**

U.S.P.H.S. CAREER DEVELOPMENT AWARD	1975 - 1980
Pharmaceutical Manufacturers Association Foundation Research Award	1973
Tulane University School of Medicine Faculty Development Award	1973
Edward G. Schlieder Foundation Award	1973 - 1976
Arthritis Foundation Research Award	1975 - 1977
Merck Research Award	1974
Research Fellow of the Arthritis Foundation (Louisiana Chapter)	1975
First recipient of the George Clark Memorial Arthritis Fund	1975

First recipient of the James Woodrow Waggoner Arthritis Fund	1976
Edward G. Schlieder Foundation Grant Award	1978 - 1981
Smith, Kline & French Research Award	1977
Lilly Research Award	1978
Merck Research Award	1978
American Men and Women of Science	
Tulane Medical School - Outstanding Teacher Award	1983
UCLA School of Medicine - Outstanding Teacher Award	1986
1987 AMSA Golden Apple Award (for teaching) - UCLA School of Medicine	
1988 AMSA Golden Apple Award (for teaching) - UCLA School of Medicine	
1989 AMSA Golden Apple Award (for teaching) - UCLA School of Medicine	
1990 AMSA Golden Apple Award (for teaching) - UCLA School of Medicine	
Alpha Omega Alpha - Honorary Member - elected in 1990	
1991 AMSA Golden Apple Award (for teaching) - UCLA School of Medicine	
1993 AMSA Golden Apple Award (for teaching) - UCLA School of Medicine	
1993 UCLA School of Medicine <i>Award for Excellence in Education</i>	
1994 AMSA Golden Apple Award (for teaching) - UCLA School of Medicine	
1995 AMSA Golden Apple Award (for teaching) - UCLA School of Medicine	
Wellcome Visiting Professor - Marshall University School of Medicine	1995
1997 AMSA Golden Apple Award (for teaching) - UCLA School of Medicine	
1998 AMSA Golden Apple Award (for teaching) - UCLA School of Medicine	
1999 AMSA Golden Apple Award (for teaching) - UCLA School of Medicine	

### **SPECIAL AWARDS:**

**ROUSSEL UCLAF PRIZE - 1994 - for Cell Communication and Signaling** in recognition of the discovery that *"Nitric Oxide (NO), a Radical Gas, is a Biological Mediator in Mammals"*. Shared with Dr. Salvador Moncada and Dr. Robert Furchgott.

**CIBA AWARD FOR HYPERTENSION RESEARCH - 1995 - for Discovery of the Roles of Nitric Oxide and Cyclic GMP in Vascular Function.** Shared with Dr. Salvador Moncada.

**BASIC RESEARCH PRIZE of the American Heart Association - 1998** - in recognition of outstanding contributions to the advancement of cardiovascular science.

**NOBEL PRIZE IN PHYSIOLOGY OR MEDICINE - 1998** - for *"nitric oxide as a signaling molecule in the cardiovascular system"*. Shared with Robert Furchgott and Ferid Murad.

**National Academy of Sciences** - elected in 1999

**American Academy of Arts and Sciences** - elected in 1999

**Institute of Medicine** - elected in 2002

**American Philosophical Society** - elected in 2007

### **HONORARY DOCTORATE DEGREES:**

University of Buenos Aires School of Medicine - Republic of Argentina, 1996

University of Napoli School of Medicine I - Italy, 1999

University of Napoli School of Medicine II - Italy, 1999

University of the Republic - Montevideo, Uruguay, 1999

UniNorte School of Medicine - Asuncion, Paraguay, 2000

Charles University School of Medicine - Prague, Czech Republic, 2000

University of Bologna School of Medicine - Italy, 2000

Tulane University - New Orleans, LA, 2001

University of Minnesota - Minneapolis, MN, 2002

University of Athens - Greece, 2002  
 University of Perugia - Italy, 2004  
 Medical University of Warsaw – Poland, 2006  
**RESEARCH RELATED ACTIVITIES:**

Founder and President of Board of Directors of the new professional society: **NITRIC OXIDE Society** incorporated 1996

Founder and Editor-In-Chief of the new scientific journal: **NITRIC OXIDE Biology and Chemistry** Academic Press ,1996

**TEXTBOOK EDITOR:**

**Nitric Oxide - Biology and Pathobiology** Edited by Louis J. Ignarro. Over 1,000 pages and 58 chapters. Academic Press, San Diego, 2000.

**FEDERALLY FUNDED GRANT SUPPORT** (since 1981):

1. U.S.P.H.S., N.I.H., NIAMDD (1981 - 1984) P/I "Role of Cyclic GMP in Cellular Function" (\$215,500).
2. U.S.P.H.S., N.I.H., NHLBI (1982 - 1985) P/I "Role of Cyclic GMP in Vascular Smooth Muscle Relaxation" (\$205,750).
3. U.S.P.H.S., N.I.H., NIAMDD (1984 - 1987) P/I "Regulation of Cyclic GMP Metabolism by Porphyrins and Metalloporphyrins" (approx. \$260,550).
4. U.S.P.H.S., N.I.H., NHLBI (1985 - 1990) P/I "Mechanisms of Action of Vasodilator Drugs" (\$844,512).
5. U.S.P.H.S., N.I.H., NHLBI (1990 - 1995) P/I "Pharmacodynamics of Endothelium-Derived Nitric Oxide" (\$1,240,140).
6. U.S.P.H.S., N.I.H., NHLBI (1991 - 1995) P/I "Regulation of Nitric Oxide Formation in Vascular Tissue" (\$649,775).
7. U.S.P.H.S., N.I.H., NICHD (1989 - 1992) Co-P/I "EDRF and Prostacyclin in Human Umbilical Vessels" (\$461,773).
8. U.S.P.H.S., N.I.H., NICHD (1992 - 1995) Co-P/I "EDNO and Uterine Blood Flow in Pregnancy" (\$480,137).
9. U.S.P.H.S., N.I.H., NICHD (1994) P/I "Biochemistry and Molecular Biology of Nitric Oxide" (International Conference) (\$15,000).
10. U.S.P.H.S., N.I.H., NHLBI (1995 – 2000) P/I "Regulation of Activity and Expression of NO Synthase" (\$1,366,235).
11. U.S.P.H.S., N.I.H., NHLBI (1997 - 2002) P/I "Regulation of Nitric Oxide Formation in Vascular Tissue" (\$1,476,128).
12. U.S.P.H.S., N.I.H., NICHD (1997 - 2002) Co-P/I "EDNO and Uterine Blood Flow in Pregnancy" (\$865,150).
13. U.S.P.H.S., N.I.H., NHLBI (1997 - 2000) Co-P/I "Physiological Role of N-Hydroxyarginine" (\$595,000).

14. U.S.P.H.S., N.I.H., NHLBI (1999 - 2002) P/I "Role of NO Synthase in Cell Proliferation" (\$650,000).
15. U.S.P.H.S., N.I.H., NHLBI (1999 - 2003) P/I "Regulation of Expression of NO Synthase" (\$950,000).
16. U.S.P.H.S., N.I.H., NHLBI (1999 - 2002) P/I "Cytostatic Role of the Arginine-Nitric Oxide Pathway" (\$585,000).
17. U.S.P.H.S., N.I.H., NHLBI (2001 - 2005) P/I "Arginase and Nitric Oxide in Atherosclerosis" (\$1,065,000).

## PUBLICATIONS

### ABSTRACTS:

1. Louis J. Ignarro and F.E. Shideman. Catechol-O-methyl transferase (COMT) and monoamine oxidase (MAO) activities in the heart of the developing chick embryo. Fed. Proc. 24:388, 1965.
2. Louis J. Ignarro and F.E. Shideman. Norepinephrine (NE) and epinephrine (E) concentrations in the heart of the embryonic and developing chick. The Pharmacologist 7:184, 1965.
3. Louis J. Ignarro and F.E. Shideman. Dopa and dopamine concentrations in the heart of the embryonic and developing chick. Fed. Proc. 25:383, 1966.
4. Louis J. Ignarro. The presence of alpha and beta-adrenergic receptors in the spleen of the mouse. Fed. Proc. 26:401, 1967.
5. Louis J. Ignarro and Elwood O. Titus. Existence of an alpha-adrenergic receptor reserve in the spleen of the mouse. The Pharmacologist 9:234, 1967.
6. Louis J. Ignarro. Lysosome membrane stabilization: An effect apparently selective for anti-inflammatory drugs. Fed. Proc. 29:784, 1970.
7. Louis J. Ignarro and Joseph Slywka. Changes in lysosome and erythrocyte membrane stability and both local and systemic lysosomal enzyme levels in adjuvant-induced polyarthritis. The Pharmacologist 12:202, 1970.
8. Louis J. Ignarro. Lysosome membrane stabilization *in vivo*: Effects of steroidal and non-steroidal anti-inflammatory drugs. The Pharmacologist 13, 1971.
9. Louis J. Ignarro, Natalie Krassikoff and Joseph Slywka. Inhibition of lysosomal enzyme release by catecholamines, histamine, serotonin and adenosine-5'-triphosphate (ATP): possible mediation by cyclic 3',5'-adenosine monophosphate (cAMP). Fed. Proc. 31:281, 1972.
10. Louis J. Ignarro and Jeffrey Winters. Effect of drugs on filipin-induced acute inflammation in the rat. The Pharmacologist 14, 1972.
11. Arnold L. Oronsky, Robert J. Perper and Louis J. Ignarro. Use of canine asthma for detection of clinically active anti-asthmatic agents. The Pharmacologist 14, 1972.
12. Carmelo Colombo, Louis J. Ignarro and Jerome J. Chart. Enzyme release from polymorphonuclear leukocyte (PMN) lysosomes: Inhibition by catecholamines and cyclic AMP, acceleration by cholinergic agents and cyclic GMP. Fed. Proc. 32, April 1973.
13. Arnold L. Oronsky, Louis J. Ignarro and Robert J. Perper. An *in vitro* model for estimating chondromucoprotein degradation by human polymorphonuclear leukocytes utilizing <sup>35</sup>S-labelled cartilage. Fed. Proc. 32, April 1973.
14. Louis J. Ignarro, Arnold L. Oronsky and Robert J. Perper. Release of cartilage mucopolysaccharide-degrading neutral protease from human leukocytes in the presence of aggregated gamma globulin. Fed. Proc. 32, April, 1973.
15. Louis J. Ignarro. Phagocytic release of neutral protease from human leukocytes: Acceleration by acetylcholine and cyclic GMP, inhibition by norepinephrine and cyclic AMP. Pharmacologist 15, Fall, 1973.

16. William J. George, Richard J. Paddock and Louis J. Ignarro. Cyclic GMP and cyclic AMP levels in human neutrophils during lysosomal enzyme release: Elevation of cyclic GMP by acetylcholine and of cyclic AMP by epinephrine. Pharmacologist 15, Fall, 1973.
17. L.E. White, L.J. Ignarro and W.J. George. Stimulation of rat cardiac guanyl cyclase by acetylcholine. Pharmacologist 15, Fall, 1973.
18. Robert J. Smith, Louis J. Ignarro and James W. Fisher. Lysosomal Membrane Labilization: A possible role for cobalt in erythropoietin production. Pharmacologist 15, Fall 1973.
19. Robert J. Smith, Louis J. Ignarro and James W. Fisher. Cobalt and Erythropoiesis: Effects of cobalt and other metals on subcellular organelles in the light mitochondrial fraction (LMF) of rat kidney. Meeting of the American Society of Hematology, December 1973.
20. Louis J. Ignarro, LuAnn E. White, Robert D. Wilkerson and William J. George. Cardiac guanyl cyclase: Stimulation by acetylcholine and calcium. Circulation 48:43, 1973.
21. Louis J. Ignarro, Stella Y. Monday and William J. George. Hormonal control of lysosomal enzyme release from human neutrophils: Elevation of cyclic 3',5'-guanosine monophosphate during cell contact with immune reactants. Fed. Proc. 33, April 1974.
22. William J. George, LuAnn E. White, Richard J. Paddock and Louis J. Ignarro. Effects of autonomic agents on contractile force and tissue levels of cyclic GMP and cyclic AMP in isolated rabbit atria. Fed. Proc. 33:344, April 1974.
23. Louis J. Ignarro, Stella Y. Cech and William J. George. Mediation of lysosomal enzyme secretion from human neutrophils by cyclic GMP: Requirement of calcium, and inhibition by cyclic AMP. Pharmacologist 16, Fall 1974.
24. Robert J. Smith and Louis J. Ignarro. Stimulation-Secretion coupling in human neutrophils: Link between calcium influx and cyclic GMP accumulation in lysosomal enzyme secretion. Pharmacologist 16, Fall 1974.
25. Louis J. Ignarro and William J. George. Hormonal control of lysosomal enzyme release from human neutrophils by autonomic neurohormones and cyclic nucleotides. Clin. Res. 22:68A, 1974.
26. Richard J. Paddock, Robert D. Wilkerson, Louis J. Ignarro and William J. George. Effects of derivatives of cyclic GMP and cyclic AMP on contractile force of cat papillary muscle. Clin. Res. 22, Abs., 1974.
27. LuAnn White, Louis J. Ignarro and William J. George. Kinetic effects of acetylcholine on cardiac guanyl cyclase. Clin. Res. 22:57A, 1974.
28. Louis J. Ignarro, Stella Y. Cech and William J. George. Inhibition of cyclic GMP accumulation in, and lysosomal enzyme secretion from, human neutrophils by glucocorticosteroids. Fed. Proc. 34:231, 1975.
29. R.W. Busuttill, L.J. Ignarro, H.C. Shirkey and W.J. George. Improved recovery of the anoxic heart with methylprednisolone: A mechanism involving lysosomal enzyme release by cyclic nucleotides. Fed. Proc. 34:265, 1975.
30. Louis J. Ignarro and Stella Y. Cech. Inhibition of neutrophil-mediated cartilage degradation by prostaglandins and glucocorticosteroids. Arthritis Rheum. 18:406A, 1975.

31. Darlene Yao, Rosemarie Gross, Sahba Abdi and Louis J. Ignarro. Subcellular localization of guanylate cyclase in rat lung: Technical problems associated with the use of manganese and theophylline. Pharmacologist 17:269, 1975.
32. Rosemarie Gross, Sahba Abdi, Darlene Yao and Louis J. Ignarro. Guanylate cyclase in soluble fraction of rat lung: Stimulation by acetylcholine, pilocarpine, serotonin, histamine and bradykinin: inhibition by epinephrine and isoproterenol. Pharmacologist 17:269, 1975.
33. Louis J. Ignarro and William J. George. Guanylate cyclase activity in purified human polymorphonuclear leukocytes. Pharmacologist 17:270, 1975.
34. W.J. George, R.W. Busuttill and L.J. Ignarro. Reduction of myocardial cyclic GMP content as a possible mechanism for protection of the hypoxic heart by methylprednisolone (MP). Pharmacologist 17:269, 1975.
35. Louis J. Ignarro and Stella Y. Cech. Inhibition of human neutrophil-mediated cartilage degradation by methylprednisolone. Clin. Res. 24:17A, 1976.
36. Louis J. Ignarro, Rosemarie A. Gross and Dennis M. Gross. Inhibition of mammalian soluble guanylate cyclase activity by adenosine 5'-tetrphosphate and guanosine 5'-tetrphosphate. Pharmacologist 18:221, 1976.
37. Stella Y. Cech, Rosemarie A. Gross and Louis J. Ignarro. Cytidylate cyclase (CC) activity and the formation of cyclic 3',5'-cytidine monophosphate (cCMP) in mouse liver, spleen and myeloid leukemic tumors. Pharmacologist 18:223, 1976.
38. Stella Y. Cech, Rosemarie A. Gross and Louis J. Ignarro. Cytidylate cyclase (CC) activity and the possible formation of cyclic 3',5'-cytidine monophosphate (cCMP) in the mouse liver. Clin. Res. 25:11A, 1977.
39. Stella Y. Cech and Louis J. Ignarro. Cytidine 3',5'-monophosphate (cCMP) synthesis in vitro by mouse liver homogenates. Pharmacologist 19:202, 1977.
40. Stella Y. Cech and Louis J. Ignarro. Formation of a new cyclic nucleotide-- cytidine 3',5'-monophosphate (cyclic CMP)--by mammalian tissues. Clinical Res. 26:31, 1978.
41. Darlene Yao Gruetter and Louis J. Ignarro. Activation of guanylate cyclase from guinea pig lung by arachidonic acid and prostaglandins. Clinical Res. 26:32, 1978.
42. Louis J. Ignarro and Rosemarie A. Gross. Somatostatin inhibition of glucagon- activated liver adenylate cyclase and cyclic AMP formation. Clinical Res. 26:33, 1978.
43. Louis J. Ignarro and Rosemarie A. Gross. Somatostatin inhibition of glucagon- activated liver adenylate cyclase and cyclic AMP formation: An effect specific for glucagon. Fed. Proc. 37:339, 1978.
44. Stella Y. Cech and Louis J. Ignarro. Cyclic CMP (cytidine 3',5'-monophosphate) formation from CTP by cytidylate cyclase in the mammalian species. Fed. Proc. 37:390, 1978.
45. D.Y. Gruetter, A.L. Hyman, P.J. Kadowitz and L.J. Ignarro. Stimulation of lung guanylate cyclase and cyclic 3',5'-guanosine monophosphate formation by lipoxidase, phospholipase A-2 and arachidonate. Clinical Res. 26:756A, 1978.

46. E. Ohlstein, D.B. McNamara, C.A. Gruetter and L.J. Ignarro. Guanylate cyclase activation by nitroprusside and methyl-nitro-nitrosoguanidine: Differences in mechanism and similarities in vascular smooth muscle relaxation. Clinical Res. 26:757A, 1978.
47. J. Rothman and L.J. Ignarro. Effect of anti-insulin on pancreatic somatostatin release. Clinical Res. 26:775A, 1978.
48. C.A. Gruetter, B.K. Barry, D.B. McNamara, P.J. Kadowitz and L.J. Ignarro. Nitric oxide, cigarette smoke and nitrosamines relax coronary artery and activate soluble guanylate cyclase. Fed. Proc. 38: 432, 1979.
49. E.H. Ohlstein, D.Y. Gruetter and L.J. Ignarro. Methemoglobin blockade of guanylate cyclase activation by nitroso compounds: reversal by sulfhydryl agents: dithiothreitol enhances release of nitric oxide from nitroso compounds. Fed. Proc. 38:432, 1979.
50. D.Y. Gruetter, P.J. Kadowitz and L.J. Ignarro. Arachidonic acid activates guanylate cyclase by two independent mechanisms: involvement of the cyclooxygenase and lipoxygenase pathways. Fed. Proc. 38:432, 1979.
51. B.K. Barry, D.Y. Gruetter, E.H. Ohlstein and L.J. Ignarro. Activation of coronary arterial soluble guanylate cyclase by nitroprusside (NP), nitric oxide (NO) and compounds which form NO: enhancement and inhibition of activation with reductants and oxidized heme, respectively. Pharmacologist 21:252, 1979.
52. D.B. McNamara, P.J. Kadowitz and L.J. Ignarro. Cyclic AMP formation from ATP by guanylate cyclase activated with nitric oxide (NO), nitroprusside (NP) and nitrosoguanidine (MNNG): enhancement by dithiothreitol and inhibition by heme proteins and oxidants. Pharmacologist 21:252, 1979.
53. E.H. Ohlstein, B.K. Barry, D.Y. Gruetter, C.A. Gruetter and L.J. Ignarro. Activation of hepatic and coronary arterial soluble guanylate cyclase by nitric oxide (NO), nitroprusside (NP) and nitrosoguanidine (MNNG): differences in enhancement with reductants and inhibition with heme proteins. Pharmacologist 21:252, 1979.
54. D.Y. Gruetter, B.K. Barry, A.L. Hyman, P.J. Kadowitz and L.J. Ignarro. Calcium and arachidonic acid inhibit activation of Mg-dependent soluble guanylate cyclase from coronary artery by nitric oxide (NO), nitroprusside (NP) and nitrosoguanidine (MNNG). Pharmacologist 21:246, 1979.
55. C.A. Gruetter, D.Y. Gruetter, B.K. Barry, P.J. Kadowitz and L.J. Ignarro. Studies on the mechanism by which reductants enhance activation of guanylate cyclase by nitroprusside, nitrite and nitrosoguanidine. Pharmacologist 21:247, 1979.
56. B. Theo Mellion, Eliot H. Ohlstein, Albert L. Hyman, Louis J. Ignarro and Philip J. Kadowitz. Inhibition of platelet aggregation by nitric oxide, tobacco smoke and nitroso compounds which activate platelet soluble guanylate cyclase. Pharmacologist 21:247, 1979.
57. L.J. Ignarro, B.K. Barry, D.Y. Gruetter, C.A. Gruetter, E.H. Ohlstein and W.H. Baricos. Guanylate cyclase activation by nitric oxide complexes of heme and nonheme iron electron transfer proteins and S-nitrosothiols: Reduction as a mechanism of enzyme activation. Fed. Proc. 39:743, 1980.

58. C.A. Gruetter, B.K. Barry, D.Y. Gruetter, P.J. Kadowitz and L.J. Ignarro. Possible involvement of S-nitrosothiol intermediates in the mechanism of guanylate cyclase activation and relaxation in bovine coronary arterial smooth muscle by glyceryl trinitrate and  $\text{NaNO}_2$ . Fed. Proc. 39:743, 1980.
59. S.A. Napoli, C.A. Gruetter, L.J. Ignarro and P.J. Kadowitz. Relaxation of bovine coronary arterial smooth muscle by cyclic GMP, cyclic AMP and analogs. Fed. Proc. 39:742, 1980.
60. L.J. Ignarro, E.H. Ohlstein, P.J. Kadowitz and W.H. Baricos. Regulation of guanylate cyclase activation by cysteine and S-nitrosocysteine: Reduced form of guanylate cyclase represents the catalytically active state. Fed. Proc. 40:688, 1981.
61. B.T. Mellion, L.J. Ignarro, A.L. Hyman and P.J. Kadowitz. S-Nitrosothiols elevate cyclic GMP levels and inhibit aggregation of human platelets. Fed. Proc. 40:688, 1981.
62. C.A. Gruetter, D.Y. Gruetter, P.J. Kadowitz and L.J. Ignarro. Evidence that cyclic GMP formation may mediate vascular smooth muscle relaxation induced by nitrates, nitrites, nitroso compounds and S-nitrosothiols. Fed. Proc. 40:688, 1981.
63. L.J. Ignarro, B.K. Barry and C.A. Gruetter. Mechanism by which glyceryl trinitrate and sodium nitrite activate coronary arterial guanylate cyclase: Involvement of novel S-nitrosothiols as active intermediates. Clin. Res. 27:728, 1979.
64. C.B. Myers, B.T. Mellion, E. Pontecorvo, A.L. Hyman, L.J. Ignarro and P.J. Kadowitz. Inhibition of aggregation and the formation of cyclic GMP in human platelets. Clin. Res. 28:825, 1980.
65. L.J. Ignarro, C.A. Gruetter, A.L. Hyman and P.J. Kadowitz. Requirement of thiols for activation of purified coronary arterial guanylate cyclase by nitrogen oxide-containing vasodilators. Fed. Proc. 40:1793, 1981.
66. L.J. Ignarro, H.L. Lippton, J.C. Edwards, A.L. Hyman, P.J. Kadowitz and C.A. Gruetter. Mechanism of vascular smooth muscle relaxation by organic nitrates, nitrites and nitroprusside: formation of potent, unstable, S-nitrosothiol metabolites. Pharmacologist 23:187, 1981.
67. L.J. Ignarro, K.S. Wood and M.S. Wolin. Activation of purified guanylate cyclase by protoporphyrin IX: comparison of heme-deficient and heme-containing forms of soluble enzyme purified from bovine lung. Fed. Proc. 41:1470, 1982.
68. M.S. Wolin, K.S. Wood and L.J. Ignarro. A kinetic characterization of the regulation of purified soluble guanylate cyclase isolated from bovine lung by protoporphyrin IX, hematin and free metal ( $\text{Mg}^{2+}$  and  $\text{Mn}^{2+}$ ). Fed. Proc. 41:1470, 1982.
69. E.H. Ohlstein, K.S. Wood and L.J. Ignarro. Purified heme-deficient hepatic soluble guanylate cyclase requires heme for activation by NO: restoration of responsiveness by reconstitution of enzyme with heme. Fed. Proc. 41:1470, 1982.
70. B.T. Mellion, P.M. Horwitz, L.J. Ignarro and P.J. Kadowitz. Cyclic AMP and cyclic GMP act synergistically to inhibit human platelet aggregation. Fed. Proc. 41:1304, 1982.
71. J.C. Edwards, P.J. Kadowitz and L.J. Ignarro. Relaxation of bovine intrapulmonary arteries and veins by cyclic GMP and agents which elevate vascular levels of cyclic GMP. Fed. Proc. 41:1234, 1982.

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15. Louis J. Ignarro, Carl A. Gruetter, Albert L. Hyman and Philip J. Kadowitz. Molecular mechanisms of vasodilatation. In: Dopamine Receptor Agonists. Eds. G. Poste and S.T. Crooke, Plenum, New York, pp. 259-288, 1984.
16. Louis J. Ignarro, Keith S. Wood and Michael S. Wolin. Regulation of purified soluble guanylate cyclase by porphyrins and metalloporphyrins: A unifying concept. Adv. Cyclic Nucleotide Res. 17:267-274, 1984.
17. Louis J. Ignarro and Philip J. Kadowitz. Pharmacological and physiological role of cyclic GMP in vascular smooth muscle relaxation. Annual Rev. Pharmacol. 25:171-191, 1985.
18. Louis J. Ignarro and Philip J. Kadowitz. Relationships among endothelium, cGMP, and relaxation of pulmonary vessels. In: Acute Lung Injury. Eds. H. Kazemi, A.L. Hyman and P.J. Kadowitz, PSG, MA, pp. 247-264, 1986.
19. Louis J. Ignarro, Russell E. Byrns and Keith S. Wood. Biochemical and pharmacological properties of EDRF and its similarity to NO radical. In: Vasodilatation: Vascular Smooth Muscle, Peptides, Autonomic Nerves, and Endothelium. Ed. P.M. Vanhoutte, Raven Press, pp. 427-435, 1988.
20. Louis J. Ignarro, Russell E. Byrns and Keith S. Wood. Endothelium-dependent regulation of resting cyclic GMP and cyclic AMP levels and tension in pulmonary artery and vein. In: Relaxing and Contracting Factors. Ed. P.M. Vanhoutte, Humana Press, New Jersey, pp. 309-332, 1988.
21. Louis J. Ignarro. Biological actions and properties of endothelium-derived nitric oxide formed and released from artery and vein. (Invited Review) Circ. Res. 65:1-21, 1989.
22. Louis J. Ignarro. Endothelium-derived nitric oxide: actions and properties. (Invited Review) FASEB J. 3:31-36, 1989.
23. Louis J. Ignarro. Heme-dependent activation of soluble guanylate cyclase by nitric oxide: regulation of enzyme activity by porphyrins and metalloporphyrins. (Invited Review) Seminars in Hematology 26:63-76, 1989.
24. Louis J. Ignarro and Michele E. Gold. Alteration of endothelium-dependent arterial relaxation by arginine analogs and arginine depletion. In: Endothelium-Derived Vasoactive Factors. Ed. G.M. Rubanyi and P.M. Vanhoutte, Karger, Basel, pp. 64-74, 1990.
25. Louis J. Ignarro. Endothelium-derived nitric oxide: Pharmacology and relationship to the actions of organic nitrate esters. (Invited Review) Pharmaceut. Res. 6:651-659, 1989.
26. Louis J. Ignarro. Biosynthesis and metabolism of endothelium-derived nitric oxide. (Invited Review) Annu. Rev. Pharmacol. Toxicol. 30:535-560, 1990.
27. Louis J. Ignarro. Heme-dependent activation of guanylate cyclase and cyclic GMP formation by endogenous nitric oxide: A novel transduction mechanism for transcellular signaling. (Invited MiniReview) Pharmacol. Toxicol. 67:1-7, 1990.
28. Louis J. Ignarro. Endothelium-derived relaxing factor. (Invited Monograph) Encyclopedia of Human Biology Vol. 3, 371-376, 1991.
29. Louis J. Ignarro. Nitric Oxide: A novel signal transduction mechanism for transcellular communication. (Invited Review) Hypertension 16:477-483, 1990.

30. Louis J. Ignarro. Heme-dependent activation of guanylate cyclase by nitric oxide: A novel signal transduction mechanism. (Invited Monograph) Blood Vessels 28:67-73, 1991.
31. Louis J. Ignarro, Keith S. Wood, and Jon M. Fukuto. Continuous basal formation of endothelium-derived relaxing factor and muscle-derived relaxing factor, both of which are nitric oxide. (Invited Monograph) J. Cardiovasc. Pharmacol. 17:S229-S233, 1991.
32. Louis J. Ignarro. Signal transduction mechanisms involving nitric oxide (Invited Review) Biochem. Pharmacol. 41:485-490, 1991.
33. Louis J. Ignarro. Physiological significance of endogenous nitric oxide. In: Seminars in Perinatology - Endothelium-Derived Vasoactive Substances. Eds: G. Chaudhuri, L.J. Ignarro and D. McNellis; W.B. Saunders Company; 15:20-26, 1991.
34. Louis J. Ignarro, Gordon Ross and Jan Tillisch. Conferences and Reviews: Pharmacology of endothelium-derived nitric oxide and nitrovasodilators. West. J. Med. 154:51-62, 1991.
35. Louis J. Ignarro. Pharmacological, biochemical, and chemical evidence that EDRF is NO or a labile nitroso precursor. In: Endothelial Regulation of Vascular Tone. Eds: U.S. Ryan and G.M. Rubanyi; Marcel Dekker, Inc.; pp 37-49, 1992.
36. Louis J. Ignarro and georgette M. Buga. Vascular smooth muscle and endothelial cell function. In: Perinatal and Pediatric Pathophysiology: A Clinical Perspective. Eds: P.D. Gluckman and M.A. Heymann; Edward Arnold Publishers Ltd; pp.462-471, 1993.
37. Louis J. Ignarro. Nitric oxide as a communication signal in vascular and neuronal cells. In: NITRIC OXIDE Principles and Actions. Ed. J.R. Lancaster, Jr.; Academic Press; pp. 111-137, 1996.
38. Louis J. Ignarro. Regulation of cytosolic guanylyl cyclase by porphyrins and metalloporphyrins. In: Cyclic GMP: Synthesis, Metabolism and Function. Ed. F. Murad; Academic Press; Vol. 26:35-65, 1994.
39. Louis J. Ignarro. The physiological and pathophysiological significance of nitric oxide. In: Textbook of Critical Care. 3rd edition. Eds: A. Grenvik, P.R. Holbrook, W.C. Shoemaker; W.B. Saunders Company; Chapter 27, pp. 208-215, 1995.
40. Louis J. Ignarro. Nitric oxide-mediated vasorelaxation. In: Thrombosis and Haemostasis. Ed. M.B. Zucker; Vol. 70:148-151, 1993.
41. Peggy A. Bush, William J. Aronson, Jacob Rajfer and Louis J. Ignarro. The L-arginine-nitric oxide-cyclic GMP pathway mediates inhibitory nonadrenergic-noncholinergic neurotransmission in the corpus cavernosum of human and rabbit. Circulation 87 (Suppl. V):V-30 - V-32, 1993.
42. G. Chaudhuri, J.F. Pensabene, C.I. Kim, L.J. Ignarro and B.C. Bloor. Hyperoxia attenuates the vascular actions of endogenous nitric oxide in awake, chronically instrumented, miniswine in vivo. In: Biology of Nitric Oxide. pp. 142-149, 1993.
43. Louis J. Ignarro. Regulation of cytosolic guanylyl cyclase by porphyrins and metalloporphyrins. In: Advances in Pharmacology. Vol. 26: 35-65, 1994.
44. Jeanette M. Griscavage, Adrian J. Hobbs and Louis J. Ignarro. Negative modulation of nitric oxide synthase by nitric oxide and nitroso compounds. In: Advances in Pharmacology. Vol. 34: 215-234, 1995.

45. Louis J. Ignarro. Volume editor: Nitric Oxide - Biochemistry, Molecular Biology, and Therapeutic Implications. In: Advances in Pharmacology. Vol. 34, 1995, Academic Press.
46. Louis J. Ignarro. Physiology and pathophysiology of nitric oxide. In: 8th European Congress of Intensive Care Medicine, pp. 23-31, 1995.
47. Louis J. Ignarro. Physiology and pathophysiology of nitric oxide. Role of nitric oxide in the pathophysiology of hypertension. In: Kidney International. Vol. 49, Suppl. 55, pp. S2-S5, 1996.
48. Louis J. Ignarro. Nitric Oxide as a Communication Signal in Vascular and Neuronal Cells. In: Nitric Oxide Principles and Actions. Ed. Jack Lancaster, Jr.; Academic Press; pp. 111-137, 1996.
49. Adrian J. Hobbs and Louis J. Ignarro. Nitric Oxide-Cyclic GMP Signal Transduction System. In: Methods in Enzymology - Nitric Oxide - Part B - Physiological and Pathophysiological Processes. Ed. Lester Packer; Academic Press, Inc.; 269:134-148, 1996.
50. Adrian J. Hobbs and Louis J. Ignarro. The Nitric Oxide Cyclic GMP Signal Transduction System. In: Nitric Oxide and the Lung. Eds. W. M. Zapol and K. D. Bloch; Marcel Dekker, Inc.; pp. 1-57, 1997.
51. Louis J. Ignarro. Activation and regulation of the nitric oxide-cyclic GMP signal transduction pathway by oxidative stress. In: Oxidative Stress and Signal Transduction. Eds. E. Cadenas and H. J. Forman; Chapman & Hall, pp. 3-31, 1997.
52. Jon M. Fukuto and Louis J. Ignarro. *In vivo* aspects of nitric oxide (NO) chemistry: Does peroxynitrite (OONO) play a major role in cytotoxicity? Accounts Chem. Res. 30:149-152, 1997.
53. Adrian J. Hobbs and Louis J. Ignarro. Chemistry and Molecular Biology of Nitric Oxide Synthesis. In: The Haemodynamic Effects of Nitric Oxide. Eds. R.T. Mathie and T.M. Griffith; Imperial College Press, pp. 52-81, 1999.
54. Louis J. Ignarro. Nitric Oxide: A unique endogenous signaling molecule in vascular biology (Nobel Lecture). Angew. Chem. Int. Ed. 38: 1882-1892, 1999.
55. Louis J. Ignarro, Giuseppe Cirino, Alessandro Casini and Claudio Napoli. Nitric oxide as a signaling molecule in the vascular system: an overview. J. Cardiovascular Pharmacol. 34: 879-886, 1999.
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57. Louis J. Ignarro, Giuseppe Cirino, Alessandro Casini and Claudio Napoli. Nitric oxide as a signaling molecule in the vascular system: an overview. J. Cardiovasc. Pharmacol. 34: 876-884, 1999.
58. Louis J. Ignarro, Giuseppe Cirino, Alessandro Casini and Claudio Napoli. Nitric oxide as a signaling molecule in the vascular system: an overview. J. Cardiovascular Pharmacol. 34: 879-886, 1999.
59. Louis J. Ignarro. Nitric oxide in the regulation of blood flow. In: Nitric Oxide and the Regulation of the Peripheral Circulation. Eds. P.J. Kadowitz and D.B. McNamara; Birkhäuser, pp. 1-12, 2000.

60. Louis J. Ignarro. Introduction and Overview. In: Nitric Oxide – Biology and Pathobiology. Ed. L. J. Ignarro; Academic Press, San Diego, pp. 3-19, 2000.
61. Georgette M. Buga and Louis J. Ignarro. Nitric Oxide and Cancer. In: Nitric Oxide – Biology and Pathobiology. Ed. L. J. Ignarro; Academic Press, San Diego, pp. 895-920, 2000.
62. Louis J. Ignarro and Aaron Jacobs. Nitric oxide synthase and the production of nitric oxide. In: Handbook of Chemical Neuroanatomy, Volume 17 – Functional Neuroanatomy of the Nitric Oxide System. Eds. H.W.M. Steinbusch, J. De Vente and S.R. Vincent; Elsevier, pp. 1-17, 2000.
63. Claudio Napoli and Louis J. Ignarro. Nitric oxide and atherosclerosis. NO Biol. Chem. **5**: 88-97, 2001.
64. Louis J. Ignarro, Claudio Napoli and Joseph Loscalzo. Nitric oxide donors and cardiovascular agents modulating the bioactivity of nitric oxide – an overview. Circ. Res. **90**: 21-28, 2002.
65. Louis J. Ignarro. Nitric oxide as a unique signaling molecule in the vascular system: a historical overview. J. Physiol. Pharmacol. **53**:503-514, 2002.
66. Louis J. Ignarro. After 130 years, the molecular mechanism of action of nitroglycerin is revealed. Proc. Natl. Acad. Sci. U.S.A. **99**:7816-7817, 2002.
67. John L. Wallace, Louis J. Ignarro and Stefano Fiorucci. Potential cardioprotective actions of NO-releasing aspirin. Nat. Rev. Drug Discov. **1**:375-382, 2002.
68. Claudio Napoli and Louis J. Ignarro. Nitric oxide-releasing drugs. Annu. Rev. Pharmacol. Toxicol. **43**:97-123, 2003.
69. Filomena de Nigris, A. Lerman, Louis J. Ignarro, Sharon Williams Ignarro, Vincenzo Sica, A.H. Baker, Lilach O. Lerman, Y.J. Geng and Claudio Napoli. Oxidation-sensitive mechanisms, vascular apoptosis and atherosclerosis. Trends Mol. Med. **9**:351-359, 2003.

**SPECIAL EVENTS:**

1. One of four participants in Panel Discussion on "Lysosomes and the immune response." ASPET Meetings, Fall 1970.
2. Chairman, session on LYSOSOMES, 1972 FASEB in Atlantic City, New Jersey.
3. Invited speaker, Gordon Research Conference on LYSOSOMES, in Andover, N.H., July 1972.
4. President elect, 1972-1973, RESA (division of Sigma Xi), Westchester Branch.
5. Chairman and guest speaker, session on LYSOSOMES AND TISSUE INJURY, Biochemical Pharmacology Research Discussion Group (N.Y. Acad. Sci.), September 1972.
6. Chairman, session on CYCLIC NUCLEOTIDES, 1973 ASPET in East Lansing, Michigan.
7. Invited speaker, Symposium on CYCLIC NUCLEOTIDES IN DISEASE, sponsored by the Medical College of Pennsylvania and the Physiological Society of Philadelphia, in Philadelphia, Pa., April 1974.
8. Invited speaker, Gordon Research Conference on CYCLIC AMP, in Tilton, N.H., June 1974.
9. Invited speaker, Second International Congress of Immunology, in Brighton, England, July 1974.
10. Invited speaker, International Symposium on THE CHEMISTRY AND BIOLOGY OF THE KALLIKREIN-KININ SYSTEM IN HEALTH AND DISEASE, sponsored by the Fogarty International Center and the N.H.L.I. of the N.I.H., Reston, Va., October 1974.
11. Invited speaker, Texas Medical Association, Annual Meeting (1975), San Antonio, Texas, May 1, 1975.
12. Chairman, session on CYCLIC GMP, 1975 FASEB in Atlantic City, New Jersey.
13. Invited speaker, Gordon Research Conference on Cyclic Nucleotides, in Tilton, N.H., June 1975.
14. Chairman, session on CYCLIC GMP, 1975 ASPET in Davis, California.
15. Chairman, session on CYCLIC AMP, 1976 FASEB in Anaheim, California.
16. Chairman, session on CYCLIC AMP, 1977 FASEB in Chicago, Illinois.
17. Invited speaker, Symposium on Cyclic Nucleotides and Biologic Regulation, 1976 ASPET in New Orleans, Louisiana.
18. One of two chairmen, Third International Conference on Cyclic Nucleotides, 1977, New Orleans, Louisiana. An editor of Advances in Cyclic Nucleotide Research, Volume 9, 1977.
19. Invited speaker, ICN-UCLA Symposia on Molecular and Cellular Biology, "Covalent and Non-Covalent Modulation of Protein Function," Denver, Colorado, 1979.
20. Chairman, session on CYCLIC GMP, 1979 FASEB in Dallas, Texas.

21. Chairman, Symposium on Cyclic Nucleotides and Smooth Muscle Function, 1981 ASPET in Calgary, Canada.
22. Chairman, Symposium on Cyclic Nucleotides and Vascular Smooth Muscle Relaxation, 1982 FASEB in New Orleans, LA.
23. Chairman, session on CYCLIC NUCLEOTIDES, 1983 FASEB in Chicago, Illinois.
24. Invited speaker, Smith Kline & French Symposium on "Dopamine Receptor Agonists," Philadelphia, PA, 1983.
25. Chairman and Invited Speaker, session on GUANYLATE CYCLASE AND CYCLIC GMP, Fifth International Conference on Cyclic Nucleotides and Protein Phosphorylation, Milan, Italy, 1983.
26. Chairman and Invited Speaker, session on ORGANIC NITRATE VASODILATORS, Boehringer-Mannheim Symposium on Antihypertensive Drug Therapy, Montreaux, Switzerland, 1984.
27. Guest Symposium Speaker, The 50th Jubilee Congress of the Hungarian Physiological Society, IUPS sponsored Satellite Symposium "Endothelial Cell Function," Budapest, Hungary, 1985.
28. Invited Speaker, IV International Symposium on Mechanisms of Vasodilation, 1986, Rochester, Minnesota.
29. Invited Speaker, Gordon Research Conference on Chemistry of Pyrroles, Brewster, N.H., July 1986.
30. Invited Speaker, Workshop on Neurotransmitter Deficiencies in Alzheimer's Disease, 1986, Los Angeles, California.
31. Invited Speaker, XI International Congress on Thrombosis and Haemostasis, Brussels, Belgium, July 1987.
32. Invited Speaker, VI International Symposium on Vascular Neuroeffector Mechanisms, Melbourne, Australia, Sept. 1987.
33. Chairman and Speaker, Symposium on EDRF: Identification, Properties and Metabolism, F.A.S.E.B. Symposium, Las Vegas, May, 1988.
34. Chairman, session on Endothelium-Derived Relaxing Factor, F.A.S.E.B., Las Vegas, May, 1988.
35. Associate Editor, Chemical Rubber Company (CRC) series: Critical Reviews in Pharmacological Sciences, 1988-.
36. Invited speaker, VI European and American Cardiology at the Hammersmith, University of London, Royal Postgraduate Medical School, sessions on Mechanisms of Vasodilation and Mechanism of Action of Nitroglycerin, London, England, June, 1988.
37. Invited speaker, FASEB Summer Research Conference on Endothelium and Cardiovascular Function, Copper Mountain, Colorado, August, 1988.
38. Moderator and Speaker, UCLA CHS School of Medicine Interdepartmental Conference, Pharmacology of Vasodilators, 1989.

39. Invited speaker, Debate: Is EDRF Nitric Oxide?, F.A.S.E.B., New Orleans, April, 1989.
40. Invited speaker, First International Symposium on Endothelium-Derived Vasoactive Factors, Alteration of Endothelium-Dependent Relaxation by Arginine Analogs and Arginine Depletion, Philadelphia, May, 1989.
41. Invited speaker, 3rd Cardiovascular Pharmacotherapy International Symposium on Nitrate Research: Present Status and Future Prospects, Kyoto, Japan, October, 1989.
42. Invited speaker, 3rd Cardiovascular Pharmacotherapy International Symposium on Prostaglandins and the Endothelium in the Cardiovascular System, Kyoto, Japan, October, 1989.
43. Invited Chairman and Moderator, 3rd Cardiovascular Pharmacotherapy International Symposium, Free Communication session on Endothelium-Dependent Vasodilator Responses; and Free Communication session on Nitrates in the Treatment of Angina, Kyoto, Japan, October, 1989.
44. Invited Lecturer, American Society of Clinical Pharmacology and Therapeutics, Heme-Dependent Activation of Guanylate Cyclase by Nitrogen-Containing Free Radicals Derived Endogenously or from Drugs, San Francisco, March, 1990.
45. Invited Lecturer, Symposium on Calcium and Hypertension: Theory and Clinical Applications, Modulation of Endothelium-Dependent Vascular Smooth Muscle Relaxation by Calcium, Magnesium and Cyclic GMP, Phoenix, March, 1990.
46. Invited Lecturer, Symposium on The Coronary Vasculature: Scientific Theories and Therapeutic Considerations, Endothelium-Dependent Vascular Smooth Muscle Relaxation, Monterey, June, 1990.
47. Invited Lecturer and session Chairman, IUPHAR Satellite Symposium on EDRF and EDRF-Related Substances, Endothelium-Dependent Modulation of Cyclic GMP Biosynthesis by L-Arginine and Structural Analogs of L-Arginine, Antwerp, Belgium, June, 1990.
48. Invited Lecturer and session Chairman, 1990 IUPHAR, Heme-Dependent Activation of Cytosolic Guanylate Cyclase by L-Arginine-Derived Nitric Oxide Represents a Novel Transduction Mechanism for Transcellular Signaling, Amsterdam, The Netherlands, July, 1990.
49. Invited Lecturer, 7th International Symposium on Vascular Neuroeffector Mechanisms, Heme-dependent activation of guanylate cyclase by nitric oxide: A novel signal transduction mechanism, Bonn, Germany, July, 1990.
50. Invited Speaker, CIBA-GEIGY Workshop, Nitrate Tolerance: Mechanisms and New Pharmacologic Strategies, The mechanism of action of nitric oxide and organic nitrate esters, Atlantic City, New Jersey, July, 1990.
51. Symposium Speaker and Co-Chairman, Endothelium-Derived Vasoactive Substances in Perinatal Research, Physiological significance of endogenous nitric oxide, NICHD, NIH, September, 1990.
52. Symposium Speaker, 13th Annual UC Riverside-Nichols Institute Symposium on Cellular and Molecular Endocrinology, Nitric oxide and cyclic GMP: A novel signal transduction mechanism for transcellular communication, Riverside, CA, March, 1991.

53. Symposium Speaker, The Biological Role of Nitric Oxide, The physiological role of nitric oxide and cyclic GMP in electrically induced arterial dilation and penile erection, Baltimore, MD, May, 1991.
54. Symposium Speaker, Annual Meeting of the German Physiological Society, Inhibitory nonadrenergic-noncholinergic (NANC) neurotransmission in vascular tissue involves the L-arginine-nitric oxide (NO)-cyclic GMP pathway, Freiburg, Germany, September 8, 1991.
55. Symposium Speaker, Biology of Nitric Oxide, Myocardial reoxygenation injury after ischemia is mediated by the L-arginine-nitric oxide pathway, London, U.K., September 30, 1991.
56. Session Chairman, Biology of Nitric Oxide, Cardiovascular Aspects, London, U.K., September 30, 1991.
57. Invited State-of-The-Art Lecture, 64th Scientific Sessions of the American Heart Association, The L-arginine-nitric oxide-cyclic GMP pathway: A potent endogenous mechanism for modulating pulmonary vascular tone, Anaheim, CA, November 11, 1991.
58. Session Chairman, Chemistry of Nitric Oxide and Nitrovasodilators, 64th Scientific Sessions of the American Heart Association, Anaheim, CA, November 11, 1991.
59. Symposium Speaker, International Symposium on Smooth Muscle, Mechanism of action of exogenous and endogenous nitric oxide: heme-dependent activation of guanylate cyclase represents a unifying signal transduction mechanism, Fukuoka, Japan, January, 1992.
60. Invited State-of-The-Art Lecture, 2nd International Symposium on Endothelium-Derived Vasoactive Factors, The L-arginine-nitric oxide-cyclic GMP pathway mediates inhibitory nonadrenergic noncholinergic neurotransmission, Basel, Switzerland, April, 1992.
61. Symposium Speaker, The XIV World Congress of the International Society for Heart Research, Physiological and pathophysiological roles of endothelium-derived nitric oxide in the heart, Kobe, Japan, May, 1992.
62. Symposium Speaker, William Harvey Research Conference on Nitric oxide- the rational basis for nitrate therapy, Cyclic GMP - mechanism of action of nitric oxide and nitrovasodilators, London, U.K., May, 1992.
63. Invited State-of-The-Art Lecture, A Century of Pediatrics in Groningen, Cellular mechanisms of endothelial cell activation and vascular smooth muscle relaxation, Groningen, Holland, May, 1992.
64. Symposium Speaker, IBC International Conference on Nitrate Therapy, Role of the L-arginine-NO-cyclic GMP pathway in NANC neurotransmission, Philadelphia, June, 1992.
65. Invited Speaker, Gordon Research Conference on Vascular Biology, Endothelium-derived NO and the control of vascular tone, New London, N.H., July, 1992.
66. Invited Speaker, Gordon Research Conference on Medicinal Chemistry, Novel physiological and pathophysiological actions of NO, New London, N.H., August, 1992.

67. Invited State-of-the-Art Lecture, American Motility Conference, Biosynthesis, pharmacology, and biological actions of NO, Granlibakken (Lake Tahoe), September, 1992.
68. Symposium Speaker, Nitric Oxide: Brain and Immune Systems, Role of the L-arginine-NO-cyclic GMP pathway in nonadrenergic-noncholinergic transmission and penile erection, Paraelios, Calabria, Italy, September, 1992.
69. Guest Speaker, American College of Rheumatology, Physiology and pathophysiology of nitric oxide, Atlanta, GA, September, 1992.
70. Invited Speaker, Gordon Research Conference on Kinins, Pharmacological advances in nitric oxide research, Ventura, CA, February, 1993.
71. Guest Speaker, 9th Annual ECMO Conference, Cellular mechanisms of vascular endothelial function, Keystone, CO, March, 1993.
72. Symposium Speaker, American Society of Neurochemistry, Role of nitric oxide as a neuronal mediator of penile erection, Richmond, VA, March, 1993.
73. Symposium Chairman and Speaker, Experimental Biology 93, Regulation of Vascular Vasomotor Tone, Physiological significance of NO in the mammal, New Orleans, LA, March, 1993.
74. Symposium Chairman and Speaker, Experimental Biology 93, Role of Nitric Oxide in the Central and Peripheral Nervous Systems, NANC and NO mediated vasodilation in the corpus cavernosum, New Orleans, LA, March, 1993.
75. Invited Speaker, Roussel UCLAF Symposium on Nitric Oxide, Neurotransmitter role of nitric oxide, Paris, France, April, 1993.
76. Invited Speaker, Association of University Anesthesiologists, Physiological and pathophysiological significance of nitric oxide in mammalian cell function, Asheville, NC, May, 1993.
77. Invited Speaker, American Thoracic Society, Modulation of vasomotor control by nitric oxide, San Francisco, CA, May, 1993.
78. Invited Speaker, American Thoracic Society, Nitric oxide: a ubiquitous multifunctional mediator, San Francisco, CA, May, 1993.
79. Keynote Speaker, Canadian Hypertension Society, Physiological significance of nitric oxide in the cardiovascular system, Toronto, Ontario, Canada, May, 1993.
80. Invited Speaker, XII International Congress of Nephrology, Role of nitric oxide in the regulation of vascular function, Jerusalem, Israel, June, 1993.
81. Invited Speaker, XIV International Congress of Thrombosis and Haemostasis, Role of nitric oxide in modulating cardiovascular function, New York, NY, July, 1993.
82. Symposium Chairman and Speaker, American Society for Pharmacology and Experimental Therapeutics, Physiological and pathophysiological significance of nitric oxide, San Francisco, CA, July, 1993.
83. Invited Symposium Speaker, American Society for Pharmacology and Experimental Therapeutics, Pathophysiological actions of nitric oxide in myocardial reoxygenation injury, San Francisco, CA, July, 1993.

84. Invited Symposium Speaker, Bioinorganic Chemistry Conference, Regulation of nitric oxide synthase by nitric oxide, La Jolla, CA, August, 1993.
85. Invited Symposium Chairman and Speaker, Third International Conference on the Biology of Nitric Oxide, Detection of free nitric oxide from L-arginine catalyzed by nitric oxide synthase, Cologne, Germany, October, 1993.
86. Invited Symposium Chairman, Speaker, and Poster Discussant, American heart Association Symposium on Nitric Oxide and Endothelin, Regulatory role of nitric oxide in the cardiovascular system, Boston, MA, October, 1993.
87. Invited Symposium Speaker, Functionality of the Endothelium in Health and Diseased States: A Comprehensive Review, Endothelium-dependent vasorelaxation; biosynthesis and metabolism of endothelium-derived relaxing factor, Veracruz City, Mexico, November, 1993.
88. Invited Symposium Chairman and Speaker, Uehara Memorial Foundation Symposium on Endothelium-Derived Factors and vascular Functions, Regulation of vascular endothelial cell function by nitric oxide: direct inhibition of nitric oxide synthase, Tokyo, Japan, December, 1993.
89. Invited Symposium Speaker, Western Eye Research Conference V, Overview of nitric oxide in the circulation, Lake Arrowhead, CA, January, 1994.
90. Conference Chairman and Speaker, Nitric Oxide - New Therapeutic Strategies for the Treatment of Human Diseases, Cambridge Healthtech Institute, Physiological and pathophysiological significance of nitric oxide, New Orleans, LA, February, 1994.
91. Invited Gordon Research Conference Speaker, Oxygen Radicals in Biology, Nitric oxide as a reactive radical in biological systems, Ventura, CA, February, 1994.
92. Conference Chair and Symposium Speaker - IBC 3rd International Conference on Nitric Oxide - Philadelphia, PA, March, 1994.
93. Invited Symposium Speaker - 1st International Conference on Oxidative Stress and Aging, Regulation of NO synthase activity by oxygen, oxygen-derived radicals, and NO, Kailua-Kona, Hawaii, March, 1994.
94. Invited Symposium Speaker - William Harvey Research Conferences, Endothelial Cells and their Enzymes as Targets for New Drugs, Neuronal regulation of erectile function by nitric oxide, Philadelphia, PA, April, 1994.
95. Invited Symposium Speaker - Experimental Biology 94 - two talks: 1) Regulation of NO synthase activity by NO and tetrahydrobiopterin; 2) Biological roles of nitric oxide in mammalian cells - Anaheim, CA, April, 1994.
96. Invited Symposium Speaker - Midnight Sun School on Vasoactive Control of Perinatal Circulation, Regulation of nitric oxide formation in mammalian cells, Turku, Finland, June, 1994.
97. Invited Symposium Speaker - 14th European Congress of Perinatal Medicine, Regulation of nitric oxide biosynthesis by endogenous substances, Helsinki, Finland, June, 1994.
98. Conference Co-Chair and Speaker - FASEB Summer Conference on Endothelium and Cardiovascular Control - Copper Mountain, CO, June, 1994.

99. Conference Organizer and Chairman - First International Conference on the Biochemistry and Molecular Biology of Nitric Oxide, Sunset Village, Westwood, California, July, 1994.
100. Invited Symposium Speaker - 20th Anniversary Symposium for the Whitaker Cardiovascular Institute, Physiological roles for nitric oxide in mammalian systems, Boston, MA, October, 1994.
101. Invited Symposium Speaker - Aprather Symposium on Endothelial Factors, History and overview of nitric oxide, Wuppertal, Germany, October, 1994.
102. Recipient of the Roussel Uclaf Prize for "Cell Communication and Signaling", Physiological significance of the nitric oxide-cyclic GMP signal transduction pathway, Paris, France, October, 1994.
103. Keynote Speaker - Division of Cardiology Meeting, Physiological and pathophysiological significance of nitric oxide, UCLA School of Medicine, Westwood, California, November, 1994.
104. Conference Co-Chair and Speaker - First Gordon Research Conference on Nitric Oxide in Biochemistry and Biology, Ventura, California, February, 1995.
105. Invited Symposium Speaker - Nitrate Compounds in Cardiovascular Disease: Clinical Significance and Basic Mechanisms of Action and Tolerance Development, Cyclic GMP as a mediator of vascular signaling, Baden-Baden, Germany, March, 1995.
106. Invited Symposium Speaker - First International Seminar on Vascular Biology and Medicine, Biological role of the nitric oxide-cyclic GMP pathway in vascular function, Pamplona, Spain, April, 1995.
107. Invited Symposium Speaker - 1st Orvieto Symposium: New developments in Nitric Oxide Research, Biosynthesis of nitric oxide: regulation by tetrahydrobiopterin, nitric oxide and superoxide dismutase, Orvieto, Italy, April, 1995.
108. Wellcome Visiting Professor - Marshall University School of Medicine, Huntington, West Virginia, May, 1995.
109. Invited Symposium Speaker and Session Chairman - Instituto Juan March: Center for International Meetings on Biology - Workshop on Molecular Biology and Pathophysiology of Nitric Oxide - Transcriptional regulation of inflammatory NO synthase by antioxidants, metal chelators, proteasome inhibitors and NSAIDs, Madrid, Spain, June, 1995.
110. Keynote Speaker - Great Lakes Chapter of ASPET - Physiological and pathophysiological significance of nitric oxide in mammalian cell function, Rush University, Chicago, Illinois, June, 1995.
111. Invited Faculty Congress Lecturer - 13th International Congress of Nephrology - Satellite Symposium on Hypertension: Cause and Consequence of Renal Injury - Physiology and pathophysiology of nitric oxide, Barcelona, Spain, July, 1995.
112. Invited Symposium Speaker - 9th International Conference on Cytochrome P450 - Regulation of NO synthase activity by NO: A negative feedback modulation, Zurich, Switzerland, July, 1995.

113. Invited Symposium Speaker and Session Chairman - Fourth International Meeting Biology of Nitric Oxide - Nonsteroidal antiinflammatory drugs prevent transcriptional expression of the inducible NO synthase gene in macrophages by interfering with NF-kB activation, Amelia island, Florida, September, 1995.
114. Invited Symposium Speaker and Session Chairman - 8th European Congress of Intensive Care Medicine - Physiology and pathophysiology of nitric oxide, Athens, Greece, October, 1995.
115. Guest Speaker - Medical Scientist Lecture Series for the M.D. - Ph.D. Program at the University of California at Irvine, School of Medicine - Physiology and pathophysiology of nitric oxide in mammalian cell function, Irvine, California, November, 1995.
116. Invited Speaker - Oxygen '95 - Annual conference of The Oxygen Society - Regulation of nitric oxide synthesis and action, Pasadena, California, November, 1995.
117. Invited Symposium Speaker - 211th American Chemical Society National Meeting & Exposition Program - The biology of nitric oxide, New Orleans, Louisiana, March, 1996.
118. Invited Guest Symposium Speaker - Physiological Responses of Nitric Oxide: A Tribute to Robert F. Furchgott - Physiological and pathophysiological roles of nitric oxide, Baltimore, Maryland, May, 1996.
119. Conference Organizer and Chairman - Second International Conference on the Biochemistry and Molecular Biology of Nitric Oxide, Sunset Village, Westwood, California, July, 1996.
120. Invited Symposium Speaker - VIII Biennial Meeting of the International Society for Free Radical Research - Interactions between nitric oxide and oxygen radicals, Barcelona, Spain, October, 1996.
121. Invited Opening Lecture - 4th Annual Meeting of the Japanese Vascular Biology Organization - Physiological and pathophysiological roles of nitric oxide in vascular function, Kobe, Japan, October, 1996.
122. Invited Symposium Speaker - Kobe International Symposium on Nitric Oxide in Cardiovascular Disease - Regulation of expression and catalytic activity of inducible NO synthase, Kobe, Japan, October, 1996.
123. Keynote Lecture - 4th Congreso Argentino de Hipertension Arterial - Physiological and pathophysiological roles of nitric oxide in mammalian cell function, Buenos Aires, Argentina, November, 1996.
124. Honorary Doctorate Degree - Special Lecture - University of Buenos Aires, Faculty of Pharmacy and Biochemistry - Physiology and pathophysiology of nitric oxide, Buenos Aires, Argentina, November, 1996.
125. Conference Organizer and Chairman - Second Gordon Research Conference on Nitric Oxide in Biochemistry and Biology - Ventura, California, February, 1997.
126. Presidential Lecture - 7th International Symposium on Clinical Intensive Care Medicine - Nitric oxide (NO): the story of a gas, Bremen, Germany, February, 1997.
127. Special Lecture - Royal College of Physicians of London - Endothelial Factors for Clinicians: Their Impact on Disease and Possible Future Therapeutic Implications - Nitric Oxide, London, U.K., February, 1997.

128. Invited Symposium Speaker - Oxygen Club of California - Oxidants and Antioxidants in Biology - Oxidative stress and the induction of high-output nitric oxide production, Santa Barbara, California, February, 1997.
129. Invited Symposium Speaker - American Society for Pharmacology and Experimental Therapeutics - Nitric Oxide: New Discoveries and their Clinical Implications - Nitric oxide and gene regulation in chronic inflammatory diseases, San Diego, California, March, 1997.
130. Presidential Lecture - Society for Gynecological Investigation - Physiology and pathophysiology of nitric oxide in mammalian systems, San Diego, San California, March, 1997.
131. American Physiological Society Respiration Dinner Speaker - Nitric Oxide: Past, Present and Future, New Orleans, Louisiana, April, 1997.
132. James O. Davis Graduate Student Lectureship - Physiology and pathophysiology of the arginine-nitric oxide pathway, Columbia, Missouri, April, 1997.
133. Opening Lecture - International Symposium on Nitric Oxide: Basic and Clinical Pharmacology - Nitric oxide: from nitroglycerin to EDRF to ubiquity, Odense, Denmark, June, 1997.
134. Nobel Series Lectures - Nobel Forum - Karolinska Institute - Physiological and pathophysiological roles of nitric oxide in mammalian cells, Stockholm, Sweden, June, 1997.
135. Conference Organizer and Chairman - FASEB Summer Research Conference - Endothelium and Cardiovascular Control - Copper Mountain, Colorado, July, 1997.
136. Invited Speaker - FASEB Summer Research Conference - Endothelium and Cardiovascular Control - Regulation of high output production of nitric oxide - Copper Mountain, Colorado, July, 1997.
137. Symposium Organizer and Chairman - Nitric Oxide and Cardiovascular Function - XIX Annual Meeting International Society for Heart Research, Vancouver, British Columbia, Canada, July, 1997.
138. Invited Speaker - Nitric Oxide and Cardiovascular Function - XIX Annual Meeting International Society for Heart Research, Nitric oxide: a biological mediator, Vancouver, British Columbia, Canada, July, 1997.
139. Invited Speaker and Session Chairman - Brazilian Society of Cardiology - Brazilian Congress of Cardiology - Role of nitric oxide in cardiovascular function, Sao Paulo, Brazil, September, 1997.
140. Scientific Advisory Board: Fifth International Conference on the Biology of Nitric Oxide - Kyoto, Japan, September, 1997.
141. Invited Speaker and Session Chairman - Fifth International Conference on the Biology of Nitric Oxide - Co-regulation of inducible NO synthase and arginase in endothelial and tumor cells, Kyoto, Japan, September, 1997.
142. Invited Speaker - Symposium on Cardiovascular Actions of Nitric Oxide - Factors affecting the high output production of NO, Nagoya, Japan, September, 1997.

143. Invited Speaker - Symposium on Inducible NO Synthase - Role of arginase in controlling arginine availability for iNOS, Tokyo, Japan, September, 1997.
144. Invited Opening Lecturer - International Congress on NITRIC OXIDE in Reproductive and Perinatal Medicine - Genoa, Italy, September, 1997 - Physiological and Pathophysiological Roles of Nitric Oxide.
145. Special Lecture - Society for Neuroscience - Physiology and Pathophysiology of Nitric Oxide. New Orleans, Louisiana, October, 1997.
146. Session Chairman - Oxygen Club of California - 1998 World Congress - Oxidants and Antioxidants in Biology. Santa Barbara, California, February, 1998.
147. Invited Guest Speaker - 14th Annual CMMC Symposium on ECMO & Advanced Therapies for Respiratory Failure. "Pathophysiological Properties of Nitric Oxide". Keystone, Colorado, March, 1998.
148. Juan March Foundation for Investigational Studies - NO: From Discovery to the Clinic - "Novel roles of the arginine-NO pathway in the regulation of cell proliferation". Madrid, Spain, June, 1998.
149. Conference Organizer and Chairman - Third International Conference on the Biochemistry and Molecular Biology of Nitric Oxide. Sunset Village, UCLA, Westwood, California, July, 1998.
150. Plenary Lecturer - XIII International Congress of Pharmacology (IUPHAR)- Novel Physiological Roles for Nitric Oxide. Munich, Germany, July, 1998.
151. Invited Guest Lecturer and Session Chairman- Biological Chemistry and Cellular Targets of Nitric Oxide - Nitric Oxide Cyclic GMP Signal Transduction Mechanisms. Graz, Austria, August, 1998.
152. Organizing Committee, Plenary Lecturer, and Session Chairman - IX Biennial Meeting International Society for Free Radical Research. "The Physiology of Nitric Oxide". San Paulo, Brazil, September, 1998.
153. Invited Lecturer - Vascular Biology Symposium: Endothelium, Nitric Oxide, and Atherosclerosis - 50 Year Anniversary of the NHLBI. "Nitric Oxide and Smooth Muscle Relaxation". Bethesda, Maryland, September, 1998.
154. Invited Lecturer - Symposium on Nitro-Aspirin. "Novel anti-proliferative effects of the arginine-nitric oxide pathway". Nice, France, October, 1998.
155. Invited Lecturer - International Conference on Osteoarthritis. "Physiological significance of nitric oxide". Florence, Italy, October, 1998.
156. Nobel Ceremony and Banquet - Nobel Laureate in Physiology or Medicine - December 1998.
157. Invited Speaker - 3rd Gordon Research Conference on the Chemistry of Nitric Oxide - "Roles of Arginase and NO Synthase in Regulation of Cell Proliferation". Ventura, California, February, 1999.
158. Invited Lecturer - Opening of the Wales Cardiovascular Research Institute - Lecture on "Physiological and Pathophysiological Roles of Nitric Oxide". Cardiff, Wales, U.K., February, 1999.

159. Invited Lecturer - UCLA Vascular Symposium on Nitric Oxide and Cardiovascular Disease - "NO as a Signaling Molecule in Vascular Function". UCLA, March, 1999.
160. Invited Keynote Speaker - NIH NICHD Symposium on Vasoactive Substances and Free Radicals in Perinatal Biology - "Reflections on Nitric Oxide Biology and Medicine". Alexandria, Virginia, May, 1999.
161. Invited Keynote Speaker - International Congress on Thrombosis and Hemostasis - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Lisbon, Portugal, June, 1999.
162. Symposium Plenary Speaker - International Union on Cardiovascular Physiology - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Capri, Italy, June, 1999.
163. Invited Keynote Speaker - Nitric Oxide in Cardiovascular Health and Disease - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Naples, Italy, June, 1999.
164. Honorary Medical Degree from both Schools of Medicine at the University of Naples, Italy, June, 1999.
165. Honorary Citizenship from the city of Torre del Greco in Naples, Italy, June, 1999.
166. Invited After Dinner Speaker at the Gordon Research Conference on Atherosclerosis - "The Road to Stockholm - A Nobel Mission", New Hampshire, June, 1999.
167. Invited Keynote Speaker - Chemical Advances in Drug Discovery - "Nitric oxide as a unique signaling molecule in the cardiovascular system; new insights into drug discovery", Pasadena, California, July, 1999.
168. Invited Keynote Speaker - 120 Years of Nitrate Therapy - "Nitric oxide in health and disease". Berlin, Germany, September, 1999.
169. Invited Keynote Speaker - Pfizer Pharmaceuticals Symposium - "Significance of nitric oxide in vascular biology and medicine", Osaka, Japan, September, 1999.
170. Invited Keynote Speaker - Symposium on Advances in Cardiovascular Therapy - "Nitric oxide in cardiovascular disease". Nagoya, Japan, September, Japan, 1999.
171. Invited Plenary Speaker - Japanese Biochemical Society Annual Meeting - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Yokohama, Japan, October, 1999.
172. Invited Keynote Speaker - Vascular Satellite Symposium of the Japanese Biochemical Society - "Nitric oxide in the regulation of vascular smooth muscle function". Yokohama, Japan, 1999.
173. Invited Keynote Speaker - Kowa Pharmaceuticals Symposium - Novel drugs in cardiovascular disease - "Nitric oxide in the therapy of cardiovascular disease". Tokyo, Japan, 1999.
174. Invited Plenary Speaker - Japanese Heart Failure Society Symposium - "Nitric oxide and cardiovascular disease". Fukuoka, Japan, October, 1999.

175. Invited Plenary Speaker - International Union of Biochemistry and Molecular Biology - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Seoul, Korea, October, 1999.
176. Invited Keynote Speaker - International Symposium on Antioxidants in Health and Disease - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Montevideo, Uruguay, November, 1999.
177. New Century Health Care Promotion Foundation Symposium - "Nitric oxide in health and disease". Taipei, Taiwan, November, 1999.
178. Fernandez Cruz Memorial Lecture - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Madrid, Spain, December, 1999.
179. Invited Keynote Speaker - Concepts and Controversies in Cardiovascular Medicine - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Amsterdam, Netherlands, December, 1999.
180. Invited Keynote Speaker - French Society of Cardiology - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Paris, France, January, 2000.
181. Invited Banquet Plenary Speaker - Gordon Research Conference - Oxygen Radicals in Biology - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Ventura, California, February, 2000.
182. Invited Special Lecture - Club NO - NO 2000 - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Paris, France, March, 2000.
183. Invited Plenary Speaker - Euro-Pediatrics 2000 - "Nitric oxide in Health and Disease". Rome, Italy, March, 2000.
184. Invited Keynote Speaker - Japanese Circulation Society - 64th Annual Scientific Meeting - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Osaka, Japan, April, 2000.
185. Invited Keynote Speaker - Japanese Urology Association - "Role of nitric oxide in erectile function". Sapporo, Japan, April, 2000.
186. Invited Keynote Speaker - European Association of Urology - XVth Congress - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Brussels, Belgium, April, 2000.
187. Invited Keynote Speaker - 16th International Congress on Thrombosis - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Porto, Portugal, May, 2000.
188. Invited Keynote Speaker - Advances in the Treatment of Hypertension - Menarini Conference - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Rome, Italy, May, 2000.
189. Invited Keynote Speaker - Menarini Lectures in Cardiovascular Medicine - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Glasgow, Scotland, May, 2000.
190. Recipient of Honoris Causa in Medicine - Norte University - Asuncion, Paraguay, May, 2000.

191. Invited Keynote Speaker - International Conference on Therapy of Heart Disease - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Bratislava, Slovak Republic, June, 2000.
192. Invited Speaker – Symposium on Chronic Inflammation – sponsored by NicOx, Inc. – "Role of nitric oxide as an anti-inflammatory molecule". Nice, France, July, 2000.
193. Invited Keynote Speaker – Erectile Dysfunction and its Treatment – sponsored by Pfizer, Inc. – "Nitric oxide and cyclic GMP as signaling molecules in erectile function". Chicago, IL, August, 2000.
194. Invited Keynote Speaker – World Congress on Lung Health – sponsored by Aerocrine, Inc. – "Nitric oxide as a unique signaling molecule in cardiovascular and pulmonary function". Florence, Italy, August, 2000.
195. Invited to testify before the House Appropriations Subcommittee on N.I.H. funding. Washington, DC, September, 2000.
196. Invited Keynote Speaker – International Porphyrin Symposium – "Guanylate cyclase and interactions with nitric oxide, porphyrins and metalloporphyrins". Paris, France, September, 2000.
197. Recipient of Honoris Causa in Medicine – Charles University – Prague, Czech Republic, September, 2000.
198. Recipient of Honoris Causa in Medicine – University of Bologna – Bologna, Italy, September, 2000.
199. Invited Keynote Speaker – American Society of Anesthesiology – "Nitric oxide as a unique signaling molecule in the vascular system". San Francisco, CA, October, 2000.
200. Invited Keynote Speaker – Excellence in Science Symposium – sponsored by Johnson & Johnson – "Nitric oxide as a unique signaling molecule in the cardiovascular system". New Brunswick, NJ, October, 2000.
201. Invited Keynote Speaker – Menarini Foundation Symposium on Treatment of Heart Disease – "Nitric oxide and cyclic GMP as modulators of vascular function". Florence, Italy, November, 2000.
202. Invited Guest Speaker – Symposium on erectile dysfunction – sponsored by Pfizer, Inc. – "Nitric oxide as a NANC neurotransmitter; the consequence of deficient neuronal release". Tel Aviv, Israel, November, 2000.
203. Invited Keynote Speaker – Oswaldo Cruz Foundation Symposium on Nitric Oxide and Immune Function – "Nitric oxide as a unique and global signaling molecule in immunophysiology". Rio de Janeiro, Brazil, December, 2000.
204. Invited Speaker – International Symposium on Nitric Oxide and Inflammation – sponsored by NicOx, Inc. – "Antioxidant properties of nitric oxide". London, U.K., January, 2001.
205. Invited Speaker – Prostaglandins and Nitric Oxide in Inflammation – sponsored by NicOx, Inc. – "Anti-inflammatory properties of nitric oxide; is cyclic GMP involved?". Paris, France, January, 2001.

206. Invited Keynote Speaker – The Genome Project and our Society – “What is gene transfer and how can it aid in the treatment of disease”. Florence, Italy, February, 2001.
207. Invited Keynote Speaker – Cardiology Update 2001 – “Nitric oxide as a unique protective molecule against cardiovascular disease”. Davos, Switzerland, February, 2001.
208. Invited After Dinner Speaker – Viagra Marketing Meeting – sponsored by Pfizer, Inc. – “Nitric oxide as a unique signaling molecule in the cardiovascular system”. Cancun, Mexico, March, 2001.
209. Invited Lectureship – The John E. Hoopes Lecture – “Nitric oxide as a unique signaling molecule in Physiology”. Baltimore, MD, April, 2001.
210. Invited Keynote Speaker – Breakthroughs in BioScience at Pacific Union College – “Nitric oxide as a unique signaling molecule in the cardiovascular system”. Napa Valley, CA, April, 2001.
211. Invited Keynote Speaker – Menarini Foundation Symposium on Beta Receptor Blockers – “Nitric oxide releasing beta blockers in the treatment of heart disease”. Florence, Italy, May, 2001.
212. Invited Keynote Speaker – Novel Therapy of Chronic Inflammation – “Nitric oxide in the protection against gastrointestinal inflammation”. Capri, Italy, May, 2001.
213. Recipient of Honoris Causa in Science – Tulane University – New Orleans, LA, May, 2001.
214. Invited Meeting Chairman – Menarini International Satellite Symposium – Endothelial Dysfunction and Hypertension: Nebivolol, an Innovative Therapeutic Approach. Milan, Italy, June, 2001.
215. Invited Lecture Tour in the United Kingdom – Menarini Foundation Symposium Series – Physiological Roles of Nitric Oxide in the Cardiovascular System. Lectures: Kendal, Stratford-Upon-Avon, Queen Elizabeth Hospital in Birmingham, Derbyshire, Cambridge University, Guy's Hospital in London, Royal Victoria Hospital in Belfast, and the Parliament Buildings in Belfast – June, 2001.
216. Invited Speaker – Rotary Club of Los Angeles – Presentation: The Road To Stockholm – A Nobel Experience, July, 2001.
217. Invited Lecture Tour in the United Kingdom – Menarini Foundation Symposium Series – Physiological Roles of Nitric Oxide in the Cardiovascular System. Lectures: Glasgow Royal Infirmary-Scotland, Glasgow Royal Concert Hall, Royal Victoria Postgraduate Center in Newcastle-Upon-Tyne, Welsh Heart Institute in Cardiff-Wales, Fitzpatrick Castle in Dublin-Ireland, Arundel-West Sussex, University of Clinical Sciences for Research & Education in Liverpool, Royal Marsden in London, Oxford University, and British Natural History Museum. September, 2001.
218. Invited Plenary Speaker – Symposium on Role of NO and other molecules in the cardiovascular system – “Role of NO in the Regulation of Cardiovascular Function”. Leipzig, Germany, September, 2001.
219. Invited Speaker – Menarini Foundation Symposium on Beta Blockers in Heart Failure. “Physiological Roles of Nitric Oxide in Cardiovascular Function”. Buenos Aires and Cordoba, Argentina, September, 2001.

220. 2001 Occidental Petroleum Nobel Laureate Lecturer at the Mayo Clinic – “Nitric Oxide as a unique signaling molecule in the vascular system”. Rochester, Minnesota, October, 2001.
221. Invited Lecturer – Wei Lun Visiting Professorial Lecture. “Nitric oxide in the regulation of vascular function: A historical overview”. Honk Kong, China, November, 2001.
222. Invited Lecturer – A Century of Nobel Achievements – American Heart Association Meeting. “Nitric oxide: A unique signaling molecule”. Anaheim, California, November, 2001.
223. 100-Year Anniversary Celebration of the Nobel Prizes – Invited Speaker for various events in Stockholm. Stockholm, Sweden, December, 2001.
224. Invited Lecturer – Official Opening Lecture - British Heart Foundation Laboratories at University College London. “Nitric Oxide as a unique signaling molecule in the cardiovascular system”. London, England, January, 2002.
225. Invited Speaker – Scientific Advisory Group for NicOx Incorporated. “Role of nitric oxide in the regulation of vascular smooth muscle cell proliferation”. Nice, France, January, 2002.
226. Invited Plenary Speaker – Pacific Coast Surgical Association. “Role of nitric oxide as a signaling molecule”. Las Vegas, Nevada, February, 2002.
227. Invited Lecturer – The James W. Fisher Lecture. Tulane University School of Medicine. “Nitric oxide as a unique signaling molecule in vascular biology”. New Orleans, Louisiana, March, 2002.
228. Invited Speaker – Southern California Rheumatology Society Meeting. “Physiological significance of nitric oxide”. Beverly Hills, California, March, 2002.
229. After Dinner Speaker – Ladies Auxiliary Group of Los Angeles. “The Road to Stockholm: A Nobel Mission”. Brentwood, California, March, 2002.
230. Invited Speaker – Lancôme Paris. Tokyo, Japan, January, 2003.
231. Invited Speaker – Nagoya University. Nagoya, Japan, February, 2003.
232. Invited Speaker – Menarini Foundation Symposium. Istanbul, Turkey, March, 2003.
233. Invited Speaker – Pharmacia Corporation 35<sup>th</sup> International Symposium on GH and Growth Factors in Endocrinology and Metabolism. “Role of nitric oxide as a signaling molecule in the cardiovascular system”. Prague, Czech Republic, April, 2003.
234. Invited Plenary Speaker – West Virginia University Health Sciences Center research Day. “The Road to Stockholm: A Nobel Mission”. Morgantown, West Virginia, April, 2003.
235. Invited Speaker – University of Calgary Pharmacology and Therapeutics Seminar. “Nitric oxide as a unique signaling molecule in vascular biology”. Alberta, Canada, April, 2003.

236. Invited Speaker – The Hellenic Cardiological Society 18<sup>th</sup> Annual International Meeting on Clinical Cardiology. “New scientific data related to the therapeutic role of NO”. Athens, Greece, May, 2003.
237. Invited Speaker – The 20<sup>th</sup> International Kumamoto Medical BioScience Symposium. “Nitric oxide as a unique signaling molecule in vascular biology”. Kumamoto, Japan, May, 2003.
238. Invited Speaker – Science Congress. “Nitric oxide as a unique signaling molecule in vascular biology”. Torino, Italy, June, 2003.
239. Invited Speaker – 55<sup>th</sup> Congress of the German Urological Association. “Sex and NO”. Hamburg, Germany, September, 2003.
240. Invited Lecturer – The Earl W. Sutherland Lecture. Vanderbilt University Department of Molecular Physiology & Biophysics. “Nitric oxide as a unique signaling molecule in vascular biology”. Nashville, Tennessee, October, 2003.
241. Invited Speaker – GEMI Fund Grant Award Ceremony. “Nitric oxide in biology”. Boston, Massachusetts, October, 2003.
242. Invited Lecturer – XX Congress of the Italian Society of Andrology. “NO as a mediator of erectile function”. Capri, Italy, October, 2003.
243. Invited Speaker – 1<sup>st</sup> Congress of NO. Bonn, Germany, November, 2003.
244. Invited Speaker – Lancôme Paris – Paris, France, January, 2004.
255. Invited Nobel Lecturer - A. Menarini Portugal - NO Endothelial Dysfunction on Hypertension. Lisbon, Portugal, February, 2004.
256. Invited Speaker – Berlin-Chemie. “From basic science to therapeutic concept – my long way to the Nobel Prize”. Hannover, Germany, March, 2004.
257. Invited Speaker – A. Menarini International – 2<sup>nd</sup> International Meeting on Nitric Oxide. Two lectures: “NO as a signaling molecule” and “The Road to Stockholm: A Nobel Mission”. Istanbul, Turkey, May, 2004.
258. Invited Speaker – Berlin-Chemie – Vascular NO: From Bench to Bedside. “From basic science to therapeutic concept – my long way to the Nobel Prize”. Berlin, Germany, May, 2004.
259. Invited Keynote Speaker – 15<sup>th</sup> Annual Scientific Sessions of the Society for Vascular Medicine and Biology. “Nitric oxide and protection against cardiovascular disease”. Anaheim, California, June, 2004.
260. Invited Nobel Lecturer – Nitric Oxide, Cytokines, and Inflammation: An International Symposium. “Nitric oxide and nitric oxide-releasing drugs as inhibitors of cell proliferation”. Rio de Janeiro, Brazil, June, 2004.
261. Invited Keynote Speaker – Update on Cardiovascular Diseases: The Latest News for the Clinician. “Role of nitric oxide as a signaling molecule in the cardiovascular system”. Naples, Italy, June, 2004.
262. Invited Speaker – Nestle Research Center. “Nitric oxide: a unique signaling molecule that can improve health and fitness”. Lausanne, Switzerland, September, 2004.

263. Invited Speaker – University of California, San Diego Department of Pharmacology Seminar Series. “Nitric oxide as a widespread signaling molecule in biology”. San Diego, California, September, 2004.
264. Invited Speaker – Metabolic Engineering Conference. Lake Tahoe, Nevada, September, 2004.
265. Invited Speaker – Nobel Spotlight – Tulane University Health Sciences Center 170<sup>th</sup> Anniversary. “The Road to Stockholm: A Nobel Mission”. New Orleans, Louisiana, October, 2004.
266. Invited Speaker – The Nagai Foundation. “Nitric oxide as a unique signaling molecule in the cardiovascular system”. Kumamoto, Japan, October, 2004.
267. Invited Plenary Speaker – American Society of Anesthesiologists. “Nitric oxide as a unique signaling molecule in biology”. Las Vegas, Nevada, October, 2004.
268. Invited Speaker – State University of New York at Stony Brook School of Medicine Grand Rounds. “The Road to Stockholm: A Nobel Mission”. Stony Brook, New York, November, 2004.
269. Invited Speaker – Korean Society of Food Science & Nutrition. “Nitric oxide history: past, present & future”. Jeju Island, Korea, November, 2004.
270. Invited Lecturer – A. Menarini International – A New Class Therapeutic. Two lectures: “Biologic effects of NO” and “My road to the Nobel Prize”. Caracas, Venezuela, December, 2004.
271. Invited Speaker – 3<sup>rd</sup> International Congress on Immunosuppression. “Nitric oxide history: past, present & future”. San Diego, California, December, 2004.
272. Invited Speaker – California Club Distinguished Speaker Series. “The Road to Stockholm: A Nobel Mission”. Los Angeles, California, April, 2005.
273. Invited Speaker – Menarini International 3<sup>rd</sup> International Meeting on Nitric Oxide. “The Road to Stockholm: A Nobel Mission”. Berlin, Germany, April, 2005.
274. Invited Lecturer – The Fred W. Schueler Lecture. “Nitric oxide as a unique signaling molecule”. New Orleans, Louisiana, May, 2005.
275. Invited Lecturer – The Gerald D. Aurbach Memorial Lecture. “The Road to Stockholm: A Nobel Mission”. Nashville, Tennessee, September, 2005.
276. Invited Keynote Speaker – 3<sup>rd</sup> Annual Antiangiogenesis Symposium. “The multifaceted role of nitric oxide in endothelial function in health and disease”. Boston, Massachusetts, October, 2005.
277. Invited Speaker – University of California, Los Angeles Department of Pediatrics Grand Rounds. “Nitric oxide as a unique signaling molecule in the cardiovascular system”. Los Angeles, California, November, 2005.
278. Invited Speaker – University of California, Los Angeles Department of Medicine Grand

Rounds. "Nitric oxide as a unique signaling molecule in the cardiovascular system". Los Angeles, California, February, 2006.

279. Invited Lecturer – Founders Lecture for the Association for Academic Surgery. "Unique role of nitric oxide in cardiovascular function". San Diego, California, February, 2006.
280. Recipient of Honoris Causa in Medicine – Medical University of Warsaw – Warsaw, Poland, May, 2006.

### COMMITTEES (Tulane):

1. Medical School Curriculum Committee (1973 - 1974)
2. Pharmacology Medical Course Committee (1974 - 1985)
3. Clinical Correlations to Basic Medical Sciences (1973 - 1974)
4. First Faculty Advisor to the Tulane Medical School Basic Science Club (1975 - 1977)
5. Tulane Medical School Admissions Committee (1978 - 1981)

### COMMITTEES (Outside Tulane):

1. Pharmacology Study Section, N.I.H. (1981-1985)
2. John Jacob Abel Award Committee (1984-1985)

### TEACHING RESPONSIBILITIES (Tulane):

1. Medical Pharmacology (medical course with laboratory)
2. Principles of Pharmacology (graduate course)
3. Clinical Toxicology (medical/graduate course)
4. Clinical Pharmacology (medical course)
5. Cell Biology (medical course)
6. Cellular Pharmacology (graduate course)
7. Advanced Research Techniques (interdepartmental graduate course)

### ADMINISTRATIVE/ORGANIZATIONAL RESPONSIBILITIES (Tulane):

1. Advanced Research Techniques (interdepartmental graduate course)
2. Co-organizer of Principles of Pharmacology (graduate course)
3. Co-organizer of 1978 ASPET Meeting in New Orleans
4. Pharmacology Seminar Chairman (1973 - 1980)

### ADMINISTRATIVE/ORGANIZATIONAL RESPONSIBILITIES AND COMMITTEES (UCLA):

1. Education Policy Curriculum Committee (1986 - present)
2. Medical Pharmacology Course Coordinator (1986 - present)
3. Olympic Analytical Laboratory (1986 - present)
4. Graduate Training Committee (1986 - present)
5. Department of Surgery Chairperson Search Committee (1986 - 1987)
6. Medical School Interactive Teaching Committee (1987 - present)
7. Faculty Executive Committee (1987 - 1990)
8. Medical School Education Task Force (1987 - present)
9. Selection of Annual UCLA School of Medicine Lecturer (Chairman, 1988 - present)
10. Laubisch Cardiovascular Fund Committee (1987 - present)
11. Chair, Ad Hoc Promotion Committees - departmental and university (1987 - present)
12. Faculty Marshal, Class of 1987, UCLA School of Medicine (1987)
13. Strategic Planning Action Committee (1988 - present)
14. Hippocratic Oath Ceremony Committee (1988 - present)
15. Acting Chairman, Department of Pharmacology (1989 - 1990)
16. Vice Chairman, Faculty Executive Committee, UCLA School of Medicine (1989 - 1992)
17. Member of the UCLA Medical Education, Research & Instructional Center (MERIC) (1989 - present); including subcommittees on Advisory Committee, Faculty Education, and Neuroscience Curriculum Working Group
18. Chair, Neurosciences Curriculum Committee (1989 - present)
19. Member, Minority Graduate Student Recruiting Committee (1989 - present)
20. Member, Physiology Search Committee for recruiting new faculty (1989 - 1990)
21. Member, LCME Subcommittee on Faculty (1989 - 1991)
22. Member, Legislative Assembly, UCLA School of Medicine (1988 - 1991)
23. SPAC Subcommittee on Graduate Student Education (1989 - present)

24. Member, Faculty Council (1989 - present)
25. Member, Medical Student Conduct Committee (1990 - present)
26. Member, Educational Board, UCLA Medicine Magazine (1990 - present)
27. Assistant Dean for Student Research (1990 - 1996)
28. Member, Alpha Omega Alpha (AOA) Research Award Committee (1990 - present)

### **TEACHING RESPONSIBILITIES:**

1. Medical Pharmacology 201: Coordinator and 30 lectures
2. Cellular and Molecular Pharmacology
3. Methods in Pharmacology
4. Medical Physiology 201
5. Basic Neurology 203
6. Pharmacology Journal Club: Chair

### **UCLA TEACHING AWARDS:**

1. UCLA School of Medicine - Outstanding Teacher Award (1986)
2. 1987 AMSA Golden Apple Award
3. 1988 AMSA Golden Apple Award
4. 1989 AMSA Golden Apple Award
5. 1990 AMSA Golden Apple Award
6. 1991 AMSA Golden Apple Award
7. 1992 Outstanding Professor Award for Teaching
8. 1993 AMSA Golden Apple Award
9. 1993 UCLA School of Medicine Award for Excellence in Education
10. 1994 AMSA Golden Apple Award
11. 1995 AMSA Golden Apple Award
12. 1996 AMSA Golden Apple Award
13. 1998 AMSA Golden Apple Award
14. 1999 AMSA Golden Apple Award

### **OUTSIDE FUNCTIONS:**

1. Member, American Heart Association, Los Angeles Affiliate (1987 - present)
2. Judge, 1989 American Heart Association's Young Investigators Forum (1989)
3. Member, Otto Kraye Award Selection Committee (1991)

### **GRADUATE STUDENTS (at UCLA):**

Michele E. Gold (1986 - 1990)  
 Andrew A. Lettes (Thesis committee; Pharmacology; 1985 - 1988)  
 Hal Fong Yee, Jr. (Thesis committee; MSTP Program - Physiology; 1985 - 1990)  
 Peggy A. Bush (1989 - 1992)  
 Jeanette Griscavage (1990 - 1995)  
 Nita J. Patel (Thesis committee; Pharmacology; 1986 - 1990)  
 Gordon Cohen, M.D. (1991 - 1996)  
 Kuang-Yuh Chyu (Thesis committee; Physiology; 1988 - 1992)  
 Karen H. Gyls, (Thesis committee; Pharmacology; 1987 - 1992)  
 Anjay Rastogi, M.D. (1995 - 2000)  
 Aaron Jacobs (1996 - 2002)  
 Deborah Lin (1997 - 1999) (M.S. degree)  
 Philip Michael Bauer (1997 - 2001)

**POSTDOCTORAL FELLOWS:**

Toshio Hayashi, Ph.D. (1991 – 1993)  
 Hong Sheng, Ph.D. (1992 - 1994)  
 Adrian Hobbs, Ph.D. (1992 - 1996)  
 Waldemar Radziszewski, M.D., Ph.D. (1993 - 1995)  
 Rajan Singh, Ph.D. (1996 - 1998)  
 Hermes Garban, M.D., Ph.D. (2000 -)  
 Daigo Sumi, Ph.D. (2001 - )  
 Linda Connelly, Ph.D. (2001 - )  
 Nobutake Sadamasa, M.D. (2005 - )  
 Fumio Ohta, Ph.D. (2006 - )

**PHYSICIAN FELLOWS:**

Ronald W. Day, M.D. (1989 - 1991)  
 William Aronson, M.D. (1989 - 1991)  
 Wyman Lai, M.D. (1990 - 1992)  
 Kenneth Leong (1995 - 1998)

**VISITING SCIENTISTS:**

Toshio Hayashi, M.D., Ph.D. (1991 - 1993)

**SPECIAL AWARDS:**

To my Physician Fellow - William Aronson, M.D. - First Place in the Wesson Resident Essay Competition of the American Urological Association - March, 1991 - Essay entitled "The Chemical mediator of Human Penile Erection is Nitric Oxide".

To my Surgery Resident Graduate Student - Gordon Cohen, M.D. - Recipient of the 1991 American College of Surgeons Scholarship for Advanced Study - July 1991.

### **INVITED SEMINARS (only 1982 - present):**

University of Tennessee (Pharmacology) - Regulation of Cyclic GMP Metabolism and Cellular Function, 1982.

University of Missouri-Columbia (Pharmacology) - Role of Cyclic GMP in Vasodilatation and Platelet Aggregation, 1982.

University of Mississippi-Jackson (Pharmacology) - Regulation of Cyclic GMP Formation and Effects on Vascular Smooth Muscle, 1982.

University of Texas-Houston (Pharmacy/Pharmacology) - Role of Cyclic Nucleotides in Modulating Vascular Reactivity, 1983.

Tulane University (Pharmacology) - Mechanism of Action of Nitrogen Oxide-Containing Vasodilators, 1983.

F.D.A. (Washington, D.C.) - Regulation of Cyclic GMP Formation and Its Relationship to Vasodilatation, 1983.

Louisiana State University (Biochemistry) - Purification and Properties of Soluble Guanylate Cyclase, 1983.

University of California-Los Angeles (Pharmacology) - Regulation of Guanylate Cyclase by Porphyrins and Metalloporphyrins, 1983.

Tulane University (Biochemistry) - Mechanisms of Guanylate Cyclase Activation by NO, Phenylhydrazine and Arachidonic Acid, 1983.

Tulane University (Physiology) - Mechanisms of Vasodilatation by Nitrogen Oxides, Acetylcholine and Arachidonic Acid, 1983.

University of California-Los Angeles (Pharmacology) - Mechanisms of Action of Endothelium-Dependent and Independent Vasodilators, 1984.

Tulane University (Physiology) - Endothelium-Dependent Vascular Smooth Muscle Relaxation, 1985.

University of South Alabama (Pharmacology) - Regulation of Soluble Guanylate Cyclase by Porphyrins and Metalloporphyrins, 1985.

UCLA (Chemistry/Pharmacology) - Regulation of Guanylate Cyclase by Porphyrins and Metalloporphyrins, 1986.

University of California-Irvine - Similarities Between Endothelium-Dependent and Endothelium-Independent Relaxation of Vascular Smooth Muscle, 1987.

UCLA (Pathology) - Role of Endothelium in Regulation of Vascular Smooth Muscle Tone, 1987.

Loma Linda University (Physiology) - Regulatory Role of Cyclic GMP in Mediating Endothelium-Dependent and Independent Vasodilation, 1987.

UCLA (Pharmacology) - The Pharmacology and Physiology of Endothelium-Derived Relaxing Factor (EDRF), February, 1988.

Emory University School of Medicine (Pharmacology) - Identification and Characterization of Endothelium-Derived Relaxing Factor, March, 1988.

New York Medical College (Physiology) - Identification and Characterization of EDRF from Artery and Vein as Nitric Oxide, April, 1988.

Cornell Medical College (Pharmacology) - Identification and Properties of Endothelium-Derived Relaxing Factor, April, 1988.

University of London, Hammersmith Medical School (Cardiology) - Pharmacology and Physiology of Endothelium-Derived Relaxing Factor, July, 1988.

Wellcome Research Laboratories, Beckenham, Kent (invited by Salvador Moncada) - Characterization and Pharmacology of Endothelium-Derived Nitric Oxide, July, 1988.

University of Graz, School of Medicine, Austria (Pharmacology and Toxicology) - Identification and Properties of Endothelium-Derived Relaxing Factor, July, 1988.

University of California, San Francisco (Pharmaceutical Chemistry) - Endothelium-Derived Nitric Oxide and its Relationship to Pharmacologic Actions of Nitroglycerin, January, 1989.

University of Texas Medical School, Houston (Pharmacology) - Pharmacology of Endothelium-Derived Nitric Oxide, February, 1989.

Joint Baylor University-University of Texas School of Medicine, Houston (Grand Rounds) - Pharmacology and Clinical Significance of Endothelium-Derived Relaxing Factor, February, 1989.

Ohio State University, School of Pharmacy, Columbus (Pharmacology) - Endothelium-Derived Relaxing Factor: Pharmacological and Chemical Properties, October, 1989.

Sepulveda - Veterans Administration Medical Center (Grand Rounds) - Pharmacology and Clinical Significance of Endothelium-Derived Relaxing Factor, September, 1989.

UCLA (Physiology) - The Biosynthesis, Metabolism, and Actions of Endothelium-Derived Nitric Oxide, April, 1990.

Specialty Laboratories, Inc., Santa Monica - Molecular Mechanisms of Vasodilation, May, 1990.

Michigan State University, School of Medicine (Pharmacology & Physiology) - Biosynthesis, Metabolism, and Actions of Endogenous Nitric Oxide, October, 1990.

UCLA (Pharmacology) - From Nitric Oxide and Cyclic GMP to the Control of Vascular and Platelet Function, November, 1990.

Loma Linda University (Biochemistry) - Bioregulation of Cellular Function by Modulation of the L-Arginine to Nitric Oxide Pathway and Cyclic GMP, November, 1990.

Parke-Davis Company (Pharmacology/Physiology)- The Biology Significance of Nitric Oxide, August, 1991.

Italfarmaco, Ltd. (Cardiovascular Research)- The Physiological and Pathophysiological Roles of Endogenous Nitric Oxide, August, 1991.

Amgen - Role of the L-arginine-nitric oxide pathway in mammalian physiology, February, 1992.

University of Minnesota, School of Medicine (Pharmacology)- Physiological and pathophysiological roles of nitric oxide in mammalian cells, February, 1992.

Veterans Administration Medical Center, Minneapolis, MN (Nephrology)- Physiological and pathophysiological roles of nitric oxide in mammalian cells, February, 1992.

Harvard Medical School (Cardiology)- Physiological and pathophysiological roles of endothelium-derived nitric oxide, March, 1992.

ICI Americas Pharmaceutical Group- Physiological and pathophysiological roles of nitric oxide in mammalian cells, Wilmington, Delaware, July, 1992.

UCLA - Combined Endocrine Conference - Role of nitric oxide in erectile function and dysfunction, October, 1992.

University of Kansas Medical Center (Pharmacology, Toxicology and Therapeutics) - Physiological and pathophysiological roles of nitric oxide in mammalian cell function, December, 1992.

UCLA - Jerry Lewis Center Seminar Series - Physiological and pathophysiological actions of nitric oxide, February, 1993.

UCLA - Pharmacology - The physiological basis of the L-arginine-nitric oxide-cyclic GMP pathway in mammalian cells, February, 1993.

UCLA - Interdepartmental Conferences - Moderator and Speaker - Role of nitric oxide in mediating penile erection, February, 1993.

Duke University School of Medicine - Pharmacology - Cell Biology - Marine Biology - Physiological and pathophysiological significance of nitric oxide, May, 1993.

Columbia University Physicians & Surgeons - Anesthesiology - Role of nitric oxide in physiology and pathophysiology, June, 1993.

Columbia University Physicians & Surgeons - Pharmacology - Biosynthesis and actions of nitric oxide in the cardiovascular system, June, 1993.

Ciba-Geigy Corporation - Regulation of NO synthase activity in mammalian cells, January, 1994.

University of Pittsburgh, School of Medicine - Surgery - Regulation of NO synthase activity by NO, heme iron, and redox agents, May, 1994.

Medical College of Wisconsin, School of Medicine - Physiology - Physiological and pathophysiological roles of nitric oxide in mammalian cell function, May, 1995.

Berlex Biosciences - Vascular Division - Biosynthesis of nitric oxide: Regulation of NO synthase transcription, catalysis and L-arginine availability, May, 1995.

Harbor-UCLA Medical Center - Surgery - Nitric oxide - practical implications and future potentials, September, 1995.

University of California, Irvine - Medical Scientist Program - Significance of nitric oxide in physiology and medicine, November, 1995.

Louisiana State University, School of Medicine - Physiology - Physiological and pathophysiological roles of nitric oxide in mammalian cells, March, 1996.

University of Maryland and University of Maryland Biotechnology Institute - School of Pharmacy - Physiological significance of nitric oxide in mammals, May, 1996.

Nycomed Corporation - Oslo, Norway - two talks: (1) Role of nitric oxide in cardiovascular function, and (2) Mechanism of action of nitrovasodilators - November, 1996.

Duke University School of Medicine - two talks (Medicine and Cardiology): (1) Physiology and pathophysiology of nitric oxide in mammalian cell function, and (2) Cardiovascular significance of nitric oxide - February, 1997.

University of Missouri School of Medicine - Physiology - Roles of nitric oxide in mammalian cell physiology - April, 1997.

Lilly Pharmaceuticals - Research Center - Physiology and pathophysiology of nitric oxide in mammalian systems, Indianapolis, Indiana, May, 1997.

Cedars-Sinai Medical Center - Nephrology and Endocrinology - Nitric oxide: endothelium-derived autocrine/paracrine modulator of vascular function, Los Angeles, California, May, 1997.

Karolinska Institute - Huddinge Hospital - Cardiovascular significance of nitric oxide, Stockholm, Sweden, June, 1997.

UCLA - Joint Seminars in Neuroscience - "The Biological Significance of Nitric Oxide". Los Angeles, California, February, 1998.

Johns Hopkins University School of Medicine - Department of Anesthesiology - Grand Rounds - Physiological and Pathophysiological Roles of Nitric Oxide in Mammalian Cell Function - April, 1998.

University of Naples - School of Medicine and School of Pharmacy - Physiological and pathophysiological roles of nitric oxide in mammalian cell function. October, 1998.

Beverly Hills - California - Public Lecture on "What the Nobel Prize Means to Medicine in the Next Millennium". Los Angeles, California, January, 1999

UCLA Board of Visitors Meeting - "The Importance of Private Giving in Biomedical Research". Los Angeles, California, February, 1999.

UCLA Access Graduate Student Program - Special Lecture - "Physiology and Pathophysiology of Nitric Oxide in Mammalian Cell Function". Los Angeles, California, March, 1999.

UCLA School of Dentistry - Seminar - "Nitric Oxide as a Signaling Molecule in Cardiovascular Function". Los Angeles, California, March, 1999.

UCLA Fundraising Luncheon - Talk on "Highlights of the Nobel Experience". Los Angeles, California, March, 1999.

Astra Pharmaceuticals - Gothenburg - "The Importance of Nitric Oxide and Cyclic GMP as Signaling Molecules in Biology". Gothenburg, Sweden, March, 1999.

Yale University School of Medicine - Department of Pharmacology - "Nitric Oxide as a Signaling Molecule in Health and Disease". New Haven, Connecticut, April, 1999.

University of Texas Health Sciences Center - Breckenridge Lecturer - Scientific Talk on "Role of Nitric Oxide as a Signaling Molecule in Biology". Public Talk on "The Importance of Nitric Oxide to Health and Disease in the Next Millennium". San Antonio, Texas, April, 1999.

Special Menarini Lecturer for the Country of Italy - "Physiological Roles of Nitric Oxide Systems in Cardiovascular Biology and Medicine". Rome, Italy, April 28, 1999.

Louisiana State University - Department of Physiology - Wellcome Lecturer - "Nitric Oxide as a Signaling Molecule in Vascular Biology". New Orleans, Louisiana, May, 1999.

Cedars-Sinai Hospital Board of Governors Meeting - "The Importance of Private Giving in Biomedical Research". Los Angeles, California, May, 1999.

UCLA Chancellor's Lecture - "The Road to Stockholm; a Nobel Mission". Los Angeles, California, May, 1999.

Cedars-Sinai Hospital - The Goldberg Lecture - "Nitric Oxide in Health and Disease". Los Angeles, California, May, 1999.

University of Minnesota School of Medicine - Department of Pharmacology - A Tribute to Frederick E. Shideman - "Nitric Oxide as a Signaling Molecule in the Cardiovascular System". Minneapolis, Minnesota, May, 1999.

Pfizer - Departments of Pharmacology and Drug Development - "Role of Nitric Oxide in Erectile Function". Sandwich, U.K., August, 1999.

Encino-Tarzana Regional Medical Center - "Nitric Oxide in Health and Disease". Tarzana, California, September, 1999.

Nagoya University School of Medicine - Dept. Geriatrics - "Recent progress in nitric oxide research". Nagoya, Japan, September, 1999.

Kumamoto University - Dept. Microbiology and Molecular Biology - "Why is nitric oxide important in mammalian physiology?". Kumamoto, Japan, October, 1999.

Wonkwang University School of Medicine - Dept. Microbiology & Immunology - "Nitric oxide in physiology and pathophysiology". Seoul, Korea, October, 1999.

University of the Republic School of Medicine - Dept. Biochemistry - "Nitric oxide and the NO synthase pathway inhibit the growth of vascular smooth muscle cells and tumor cells". Montevideo, Uruguay, November, 1999.

University of Buenos Aires School of Medicine - Department of Biochemistry - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Buenos Aires, Argentina, November, 1999.

Biomedical Research Institute, Academia Sinica - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Taipei, Taiwan, November, 1999.

National Cheng Kung University Medical College - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Tainan, Taiwan, November, 1999.

Groningen Hospital - Special Lecture - "Nitric oxide in health and disease". Groningen, Netherlands, December, 1999.

Utrecht National Hospital - Special Lecture - "Nitric oxide in health and disease". Utrecht, Netherlands, December, 1999.

Eindhoven Medical Center - Special Lecture - "Nitric oxide in health and disease". Eindhoven, Netherlands, December, 1999.

NicOx, Inc. - Special Lecture - "Role of the nitric oxide pathway in the regulation of cell proliferation". Nice, France, February, 2000.

Hokkaido University School of Medicine - Dept. of Cardiovascular Medicine - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Sapporo, Japan, April, 2000.

Columbia University College of Physicians & Surgeons - College Lecture - "Nitric oxide as a unique signaling molecule in the cardiovascular system". New York, New York, April, 2000.

University of Mississippi School of Medicine - Dept. of Physiology and Biophysics - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Jackson, Mississippi, April, 2000.

University of Alabama at Birmingham - School of Medicine - Dept. of Anesthesiology - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Birmingham, Alabama, April, 2000.

University of Pamplona Medical Center - Dept. of Medicine - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Pamplona, Spain, May, 2000.

Norte University School of Medicine - Dept. of Medicine - "Nitric oxide as a unique signaling molecule in the cardiovascular system". Asuncion, Paraguay, May, 2000.

Cleveland Clinic – Department of Immunology – "Nitric oxide as a unique signaling molecule in physiology and pathobiology". Cleveland, OH, October, 2000.

University of Louisville – Division of Cardiology – "Nitric oxide and cyclic GMP as modulators of cardiovascular function". Louisville, KY, October, 2000.

UCLA School of Medicine – Cardiothoracic Surgery Grand Rounds – "Nitric oxide as a unique signaling molecule in the cardiovascular system". December, 2000.

USC Health Sciences Campus – Keck School of Medicine – Opening Lecture of seminar series – "Nitric oxide as a unique signaling molecule". January, 2001.

University of Naples School of Medicine – Department of Experimental Pharmacology – "Nitric oxide in physiology and pathobiology". Naples, Italy, May, 2001.

UCLA School of Medicine – BioBasics Lecture. "One Nobel Prize, Eleven Golden Apple Awards, and the Possibility of Extended Life for Thousands". February, 2002.

***NOTE: from here on please refer, instead, to the section on Special Events continuing with Number 227.***